TEXAS DEPARTMENT OF AGRICULTURE

TODD STAPLES
COMMISSIONER

January 21, 2014

Tawanda Maignan
Emergency Response Team Leader
Risk Integration, Minor Use, and Emergency Response Branch
Registration Division I U.S. EPA Office of Pesticide Programs
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Subject: Section 18 Emergency Specific Exemption for Transform WG for the control of the Sugarcane Aphid (*Melanaphis sacchari*) in Texas.

Dear Ms. Maignan:

The Texas Department of Agriculture (TDA) requests a specific exemption under the provisions of Section 18 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended, for the use of sulfoxaflor (Transform® WG Insecticide EPA Reg. No. 62719-625) for the control of the sugarcane aphid (*Melanaphis sacchari*) in Texas.

This is the first year TDA has requested a specific exemption for this product. Dow AgroScience has been notified and supports the registration. In addition, Dow AgroScience has submitted a petition for a Section 3 registration for this use, but the submission will not be approved prior to the 2014 growing season. Scientists with Texas A&M AgriLife Extension believe the aphid is a new biotype. The aphid was identified by USDA identifiers as sugarcane aphid (*Melanaphis sacchari*), but they have been unable to establish the aphid in sugarcane. The aphid has since been discovered in Louisiana, Oklahoma and Mississippi. These states have indicated that they also want to pursue this Section 18. Documented economic damage from this pest ranges from 20% to 100% yield loss.

The requirements of 40 CFR 166.20(a, b) along with supporting information are attached for your review. We hope you will approve this application as soon as possible. Thank you for your attention to this serious problem.

Sincerely yours,

David Kostroun
Chief Administrator for Agriculture and Consumer Protection

DK/ds

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2014 FIFRA SECTION 18

General information requirements of §40 CFR 166.20(a) in an application for a specific exemption.

TYPE OF EXEMPTION BEING REQUESTED

✓ SPECIFIC

QUARANTINE

PUBLIC HEALTH

SECTION 166.20(a)(1): IDENTITY OF CONTACT PERSONS

i. This application to the Administrator of the Environmental Protection Agency (EPA) for a specific exemption to authorize the use of Sulfoxaflor (Transform® WG Insecticide EPA Reg. No. 62719-625) to control the newly introduced sugarcane aphid, *Melanaphis sp.* (thought to be *Melanaphis sacchari)* in sorghum by the Texas Department of Agriculture. Any questions related to this request should be addressed to:

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Coordinator for Pesticide Product Evaluation and Registration
Texas Department of Agriculture
P.O. Box 12847
Austin, TX 78711
Phone: (512) 936-2535
Fax: (888) 216-9860
dale.scott@TexasAgriculture.gov

ii. The following qualified experts are also available to answer questions:

University Representatives:
Dr. M.O. (Mo) Way
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SECTION 166.20(a)(2): DESCRIPTION OF THE PESTICIDE REQUESTED

i. **Common Chemical Name (Active Ingredient):** Sulfoxaflor

Trade Name and EPA Reg. No.: Transform® WG Insecticide, EPA Reg. No. 62719-625

Formulation: Active Ingredient 50%

SECTION 166.20(a)(3): DESCRIPTION OF THE PROPOSED USE

i. Sites to be treated:
Sorghum fields (grain and forage) with the newly introduced sugarcane aphid, *Melanaphis sp.* statewide.

ii. Method of Application:
Applications will be made by foliar application when populations reach economic threshold values.

iii. Rate of Application:
0.75 – 1.5 oz of Transform® WG/acre (0.023 – 0.047 lb ai/acre)

iv. **Maximum Number of Applications:**
2 applications per year (maximum of 3 oz/acre (0.094 lb ai/acre)

v. **Total Acreage to be Treated:**
According to the National Agricultural Statistics Service (NASS), 3 million acres of sorghum was planted in Texas in 2013.

vi. **Total Amount of Pesticide to be used:**
According to the previously mentioned statistics, if all 3 million acres of sorghum were treated with the maximum rate (1.5 oz/acre or 0.047 lb ai/acre) and the maximum numbers of applications are made (2 applications or 3.0 oz/acre or 0.094 lb ai/acre) then 70,313.5 gallons of Transform® WG would be used in 2014.

vii. **Restrictions and Requirements:**

- Preharvest Interval: Do not apply within 7 days of harvest for grain or 14 days of harvest for forage or stover.
- Minimum Treatment Interval: Do not make applications less than 14 days apart.
- Do not make more than two applications per acre per year.
- Do not apply more than a total of 3.0 oz of Transform WG (0.09 lb ai of sulfoxaflor) per acre per year.

Duration of the Proposed use:
Spring through late summer

viii. **Earliest Possible Harvest Date:**
Late May in South Texas

SECTION 166.20(a)(4): ALTERNATIVE METHODS OF CONTROL

Registered Alternative Pesticides:
Of the registered alternative pesticides, only Dimethoate 4 EC (dimethoate, EPA Reg. No. 19713-231) has provided adequate control. Dimethoate is an organophosphate which is labeled for use on sorghum at 1 pint per acre. Dimethoate, which is highly toxic to bees, has a use restriction that does not allow its use during pollen shed in sorghum. Insects have historically shown resistance to organophosphates. Three other pesticides registered for use in sorghum did not provide adequate control of the aphid. Those pesticides are:

Karate® with Zeon™ Technology (Lambda Cyholothrin 22.8%, EPA Reg. No. 100-1097)
Lorsban® Advanced, others (Chlorpyrifos 40.2%, EPA Reg. No. 62719-591)
Asana® XL (Esfenvalerate 8.4%, EPA Reg. No. 352-515)

Of the above mentioned insecticides, Karate® and Asana® are pyrethroids and Lorsban® is an organophosphate. Both pyrethroids and organophosphates have shown resistance potential. In field tests conducted in 2013 by Texas A&M AgriLife professionals, Karate® and Asana® both provided some initial population reduction when used at labeled rates. However, population spikes were observed soon after treatments in some instances. Chlorpyrifos did not provide satisfactory control at labeled rates.

A few varieties of resistant sorghum have been identified by researchers, but sufficient quantities of agronomically acceptable cultivars will not be available for the 2014 planting season.

SECTION 166.20(a)(5): EFFICACY OF USE PROPOSED UNDER SECTION 18

Two replicated field trials were conducted on the aphid in 2013. The first was conducted by Dr. Mo Way in August in China, Texas. The second replicated test was conducted in Weslaco, Texas, by Dr. Raul Villanueva and D. Sekula. In both trials, data showed that Transform® WG at 0.75/acre provided good control of *Melanaphis sp.*

SECTION 166.20(a)(6): EXPECTED RESIDUES FOR FOOD USES

Michael Hare, Ph.D.

Acute Assessment

Food consumption information from the USDA 1994-1996 and 1998 Nationwide Continuing Surveys of Food Intake by Individuals (CSFII) and maximum residues from field trials rather than tolerance-level residue estimates were used. It was assumed that 100% of crops covered by the registration request are treated and maximum residue levels from field trials were used.

Drinking water. Two scenarios were modeled, use of sulfoxaflor on non-aquatic row and orchard crops and use of sulfoxaflor on watercress. For the non-aquatic crop scenario, based on the Pesticide Root Zone Model/Exposure Analysis Modeling System (PRZM/EXAMS) and Screening Concentration in Ground Water (SCI-GROW) models, the estimated drinking water concentrations (EDWCs) of sulfoxaflor for acute exposures are 26.4 ppb for surface water and 69.2 ppb for ground water. For chronic exposures, EDWCs are 13.5 ppb for surface water and 69.2 ppb for ground water. For chronic exposures for cancer assessments, EDWCs are 9.3 ppb for surface water and 69.2 ppb for ground water. For the watercress scenario, the EDWCs for surface water are 91.3 ppb after one application, 182.5 ppb after two applications and 273.8 ppb after three applications.

Dietary risk estimates using both sets of EDWCs are below levels of concern. The non-aquatic-crop EDWCs are more representative of the expected exposure profile for the majority of the population. Also, water concentration values are adjusted to take into account the source of the water; the relative amounts of parent sulfoxaflor, X11719474, and X11519540; and the relative liver toxicity of the metabolites as compared to the parent compound.

For acute dietary risk assessment of the general population, the groundwater EDWC is greater than the surface water EDWC and was used in the assessment. The residue profile in groundwater is 60.9 ppb X11719474 and 8.3 ppb X11519540 (totaling 69.2 ppb). Parent sulfoxaflor does not occur in groundwater. The regulatory toxicological endpoint is based on neurotoxicity.

For acute dietary risk assessment of females 13-49, the regulatory endpoint is attributable only to the parent compound; therefore, the surface water EDWC of 9.4 ppb was used for this assessment.

A tolerance of 0.3 ppm for sulfoxaflor on grain sorghum has been established. There is no expectation of residues of sulfoxaflor and its metabolites in animal commodities as a result of the proposed use on sorghum. Thus, animal feeding studies are not needed, and tolerances need not be established for meat, milk, poultry, and eggs.

Drinking water exposures are the driver in the dietary assessment accounting for 100% of the exposures. Exposures through food (sorghum grain and syrup) are zero.

The acute dietary exposure from food and water to sulfoxaflor is 16% of the aPAD for children 1-2 years old and females 13-49 years old, the population groups receiving the greatest exposure.

Chronic Assessment

The same refinements as those used for the acute exposure assessment were used, with two exceptions: (1) average residue levels from crop field trials were used rather than maximum values and (2) average residues from feeding studies, rather than maximum values, were used to derive residue estimates for livestock commodities. It was assumed that 100% of crops are treated and average residue levels from field trials were used.

For chronic dietary risk assessment, the toxicological endpoint is liver effects, for which it is possible to account for the relative toxicities of X11719474 and X11519540 as compared to sulfoxaflor. The groundwater EDWC is greater than the surface water EDWC. The residue profile in groundwater is 60.9 ppb X11719474 and 8.3 ppb X11519540. Adjusting for the relative toxicity results in 18.3 ppb equivalents of X11719474 and 83 ppb X11519540 (totaling 101.3 ppb). The adjusted groundwater EDWC is greater than the surface water EDWC (9.3 ppb) and was used to assess the chronic dietary exposure scenario.

The maximum dietary residue intake via consumption of sorghum commodities would be only a small portion of the RfD (<0.001%) and therefore, should not cause any additional risk to humans via chronic dietary exposure. Consumption of sorghum by sensitive sub-populations such as children and non-nursing infants is essentially zero. Thus, the risk of these subpopulations to chronic dietary exposure to sulfoxaflor used on grain sorghum would be insignificant.

The major contributor to the risk was water (100%). There was no contribution from grain sorghum to the dietary exposure. All other populations under the chronic assessment show risk estimates that are below levels of concern.

Chronic exposure to sulfoxaflor from food and water is 18% of the cPAD for infants, the population group receiving the greatest exposure. There are no residential uses for sulfoxaflor.

Short-term risk. Because there is no short-term residential exposure and chronic dietary exposure has already been assessed, no further assessment of short-term risk is necessary, the chronic dietary risk assessment for evaluating short-term risk for sulfoxaflor is sufficient.

Intermediate-term risk. Intermediate-term risk is assessed based on intermediate-term residential exposure plus chronic dietary exposure. Because there is no residential exposure and chronic dietary exposure has already been assessed, no further assessment of intermediate-term risk is necessary.

Cumulative effects. Sulfoxaflor does not share a common mechanism of toxicity with any other substances, and does not produce a toxic metabolite produced by other substances. Thus, sulfoxaflor does not have a common mechanism of toxicity with other substances.

Cancer. A nonlinear RfD approach is appropriate for assessing cancer risk to sulfoxaflor. This approach will account for all chronic toxicity, including carcinogenicity that could result from exposure to sulfoxaflor. Chronic dietary risk estimates are below levels of concern; therefore, cancer risk is also below levels of concern.

There is a reasonable certainty that no harm will result to the general population, or to infants and children from aggregate exposure to sulfoxaflor as used in this emergency exemption request.

SECTION 166.20(a)(7): DISCUSSION OF RISK INFORMATION

Human Health Effects – Michael Hare, Ph.D.
Ecological Effects – David Villarreal, Ph.D.
Environmental Fate – David Villarreal, Ph.D.

Human Health

Toxicological Profile

Sulfoxaflor is a member of a new class of insecticides, the sulfoximines. It is an activator of the nicotinic acetylcholine receptor (nAChR) in insects and, to a lesser degree, mammals. The nervous system and liver are the target organs, resulting in developmental toxicity and hepatotoxicity.

Developmental toxicity was observed in rats only. Sulfoxaflor produced skeletal abnormalities likely resulting from skeletal muscle contraction due to activation of the skeletal muscle nAChR in utero. Contraction of the diaphragm, also related to skeletal muscle nAChR activation, prevented normal breathing in neonates and increased mortality. The skeletal abnormalities occurred at high doses while decreased neonatal survival occurred at slightly lower levels.

Sulfoxaflor and its major metabolites produced liver weight and enzyme changes, and tumors in subchronic, chronic and short-term studies. Hepatotoxicity occurred at lower doses in long-term studies compared to short-term studies.

Reproductive effects included an increase in Leydig cell tumors which were not treatment related due to the lack of dose response, the lack of statistical significance for the combined tumors, and the high background rates for this tumor type in F344 rats. The primary effects on male reproductive organs are secondary to the loss of normal testicular function due to the size of the Leydig Cell adenomas. The secondary effects to the male reproductive organs are also not treatment related. It appears that rats are uniquely sensitive to these developmental effects and are unlikely to be relevant to humans.

Clinical indications of neurotoxicity were observed at the highest dose tested in the acute neurotoxicity study in rats. Decreased motor activity was also observed in the mid- and high-dose groups. Since the neurotoxicity was observed only at a very high dose and many of the effects are not consistent with the perturbation of the nicotinic receptor system, it is unlikely that these effects are due to activation of the nAChR.

Tumors have been observed in rat and mouse studies. In rats, there were significant increases in hepatocellular adenomas in the high-dose males. In mice, there were significant increases in hepatocellular adenomas and carcinomas in high dose males. In female mice, there was an increase in carcinomas at the high dose. Liver tumors in mice were treatment-related. Leydig cell tumors were also observed in the high-dose group of male rats, but were not related to treatment. There was also a significant increase in preputial gland tumors in male rats in the high-dose group. Given that the liver tumors are produced by a non-linear mechanism, the Leydig cell tumors were not treatment-related, and the preputial gland tumors only occurred at the high dose in one sex of one species, the evidence of carcinogenicity was weak.

Ecological Toxicity

Sulfoxaflor (N-[methyloxido[1-[6-(trifluoromethyl)-3-pyridinyl]ethyl]-lambda 4-sulfanylidene]) is a new variety of insecticide as a member of the sulfoxamine subclass of neonicotinoid insecticides. It is considered an agonist of the nicotinic acetylcholine receptor and exhibits excitatory responses including tremors, followed by paralysis and mortality in target insects. Sulfoxaflor consists of two diastereomers in a ratio of approximately 50:50 with each diastereomer consisting of two enantiomers. Sulfoxaflor is systemically distributed in plants when applied. The chemical acts through both contact action and ingestion and provides both rapid knockdown (symptoms are typically observed within 1-2 hours of application) and residual control (generally provides from 7 to 21 days of residual control). Incident reports submitted to EPA since approximately 1994 have been tracked via the Incident Data System. Over the 2012 growing season, a Section 18 emergency use was granted for application of sulfoxaflor to cotton in four states (MS, LA, AR, TN). No incident reports have been received in association with the use of sulfoxaflor in this situation.

Sulfoxaflor is classified as practically non-toxic on an acute exposure basis, with 96-h LC_{50} values of >400 mg a.i./L for all three freshwater fish species tested (bluegill, rainbow trout, and common carp). Mortality was 5% or less at the highest test treatments in each of these studies. Treatment-related sublethal effects included discoloration at the highest treatment concentration (100% of fish at 400 mg a.i./L for bluegill) and fish swimming on the bottom (1 fish at 400 mg a.i./L for rainbow trout). No other treatment-related sublethal effects were reported. For an estuarine/marine sheepshead minnow, sulfoxaflor was also practically non-toxic with an LC_{50} of

288 mg a.i./L. Sublethal effects included loss of equilibrium or lying on the bottom of aquaria at 200 and 400 mg a.i./L. The primary degradate of sulfoxaflor is also classified as practically non-toxic to rainbow trout on an acute exposure basis (96-h LC_{50} >500 mg a.i./L).

Adverse effects from chronic exposure to sulfoxaflor were examined with two fish species (fathead minnow and sheepshead minnow) during early life stage toxicity tests. For fathead minnow, the 30-d NOAEC is 5 mg a.i./L based on a 30% reduction in mean fish weight relative to controls at the next highest concentration (LOAEC=10 mg a.i./L). No statistically significant and/or treatment-related effects were reported for hatching success, fry survival and length. For sheepshead minnow, the 30-d NOAEC is 1.3 mg a.i./L based on a statistically significant reduction in mean length (3% relative to controls) at 2.5 mg a.i./L. No statistically significant and/or treatment-related effects were reported for hatching success, fry survival and mean weight.

The acute toxicity of sulfoxaflor was evaluated for one freshwater invertebrate species, the water flea and two saltwater species (mysid shrimp and Eastern oyster). For the water flea, the 48-h EC_{50} is >400 mg a.i./L, the highest concentration tested. For Eastern oyster, new shell growth was significantly reduced at 120 mg a.i./L (75% reduction relative to control). The 96-h EC_{50} for shell growth is 93 mg a.i./L. No mortality occurred at any test concentration. Mysid shrimp are the most acutely sensitive invertebrate species tested with sulfoxaflor based on water column only exposures, with a 96-h LC_{50} of 0.67 mg a.i./L. The primary degradate of sulfoxaflor is also classified as practically non-toxic to the water flea (EC_{50} >240 mg a.i./L).

The chronic effects of sulfoxaflor to the water flea were determined in a semi-static system over a period of 21 days to nominal concentrations of 6.25, 12.5, 25, 50 and 100 mg a.i./L. Adult mortality, reproduction rate (number of young), length of the surviving adults, and days to first brood were used to determine the toxicity endpoints. No treatment-related effects on adult mortality or adult length were observed. The reproduction rate and days to first brood were significantly ($p<0.05$) different in the 100 mg a.i./L test group (40% reduction in mean number of offspring; 35% increase in time to first brood). No significant effects were observed on survival, growth or reproduction at the lower test concentrations. The 21-day NOAEC and LOAEC were determined to be 50 and 100 mg a.i./L, respectively.

The chronic effects of sulfoxaflor to mysid shrimp were determined in a flow-through system over a period of 28 days to nominal concentrations of 0.063, 0.13, 0.25, 0.50 and 1.0 mg a.i./L. Mortality of parent (F_0) and first generation (F_1), reproduction rate of F_0 (number of young), length of the surviving F_0 and F_1, and days to first brood by F_0 were used to determine the toxicity endpoints. Complete F_0 mortality (100%) was observed at the highest test concentration of 1.0 mg a.i./L within 7 days; no treatment-related effects on F_0/F_1 mortality, F_0 reproduction rate, or F_0/F_1 length were observed at the lower test concentrations. The 28-day NOAEC and LOAEC were determined to be 0.11 mg and 0.25 mg a.i./L, respectively.

Sulfoxaflor exhibited relatively low toxicity to aquatic non-vascular plants. The most sensitive aquatic nonvascular plant is the freshwater diatom with a 96-h EC_{50} of 81.2 mg a.i./L. Similarly, sulfoxaflor was not toxic to the freshwater vascular aquatic plant, *Lemna gibba*, up to the limit

amount, as indicated by a 7-d EC_{50} for frond count, dry weight and growth rate of >100 mg a.i./L with no significant adverse effects on these endpoints observed at any treatment concentration.

Based on an acute oral LD_{50} of 676 mg a.i./kg bw for bobwhite quail, sulfoxaflor is considered slightly toxic to birds on an acute oral exposure basis. On a subacute, dietary exposure basis, sulfoxaflor is classified as practically nontoxic to birds, with 5-d LC_{50} values of >5620 mg/kg-diet for mallard ducks and bobwhite quail. The NOAEL from these studies is 5620 mg/kg-diet as no treatment related mortality of sublethal effects were observed at any treatment. Similarly, the primary degradate is classified as practically nontoxic to birds on an acute oral exposure basis with a LD_{50} of >2250 mg a.i./kg bw. In two chronic, avian reproductive toxicity studies, the 20-week NOAELs ranged from 200 mg/kg-diet (mallard, highest concentration tested) to 1000 mg/kg-diet (bobwhite quail, highest concentration tested). No treatment-related adverse effects were observed at any test treatment in these studies.

For bees, sulfoxaflor is classified as very highly toxic with acute oral and contact LD_{50} values of 0.05 and 0.13 µg a.i./bee, respectively, for adult honey bees. For larvae, a 7-d oral LD_{50} of >0.2 µg a.i./bee was determined (45% mortality occurred at the highest treatment of 0.2 µg a.i./bee). The primary metabolite of sulfoxaflor is practically non-toxic to the honey bee. This lack of toxicity is consistent with the cyano-substituted neonicotinoids where similar cleavage of the cyanide group appears to eliminate their insecticidal activity. The acute oral toxicity of sulfoxaflor to adult bumble bees (*Bombus terrestris*) is similar to the honey bee; whereas its acute contact toxicity is about 20X less toxic for the bumble bee. Sulfoxaflor did not demonstrate substantial residual toxicity to honey bees exposed via treated and aged alfalfa (i.e., mortality was <15% at maximum application rates).

At the application rates used (3-67% of US maximum), the direct effects of sulfoxaflor on adult forager bee mortality, flight activity and the occurrence of behavioral abnormalities is relatively short-lived, lasting 3 days or less. Direct effects are considered those that result directly from interception of spray droplets or dermal contact with foliar residues. The direct effect of sulfoxaflor on these measures at the maximum application rate in the US is presently not known. When compared to control hives, the effect of sulfoxaflor on honey bee colony strength when applied at 3-32% of the US maximum proposed rate was not apparent in most cases. When compared to hives prior to pesticide application, sulfoxaflor applied to cotton foliage up to the maximum rate proposed in the US resulted in no discernible decline in mean colony strength by 17 days after the first application. Longer-term results were not available from this study nor were concurrent controls included. For managed bees, the primary exposure routes of concern include direct contact with spray droplets, dermal contact with foliar residues, and ingestion through consumption of contaminated pollen, nectar and associated processed food provisions. Exposure of hive bees via contaminated wax is also possible. Exposure of bees through contaminated drinking water is not expected to be nearly as important as exposure through direct contact or pollen and nectar.

In summary, sulfoxaflor is slightly toxic to practically non-toxic to fish and freshwater water aquatic invertebrates on an acute exposure basis. It is also practically non-toxic to aquatic plants (vascular and non-vascular). Sulfoxaflor is highly toxic to saltwater invertebrates on an acute exposure basis. The high toxicity of sulfoxaflor to mysid shrimp and benthic aquatic insects

relative to the water flea is consistent with the toxicity profile of other insecticides with similar MOAs. For birds and mammals, sulfoxaflor is classified as moderately toxic to practically non-toxic on an acute exposure basis. The threshold for chronic toxicity (NOAEL) to birds is 200 ppm and that for mammals is 100 ppm in the diet. Sulfoxaflor did not exhibit deleterious effects to terrestrial plants at or above its proposed maximum application rates.

For bees, sulfoxaflor is classified as very highly toxic. However, if this insecticide is strictly used as directed on the Section 18 supplemental label, no significant adverse effects are expected to Texas wildlife. Of course, standard precautions to avoid drift and runoff to waterways of the state are warranted. As stated on the Section 3 label, risk to managed bees and native pollinators from contact with pesticide spray or residues can be minimized when applications are made before 7 am or after 7 pm or when the temperature is below 55°F at the site of application.

Environmental Fate

Sulfoxaflor is a systemic insecticide which displays translaminar movement when applied to foliage. Movement of sulfoxaflor within the plant follows the direction of water transport within the plant (i.e., xylem mobile) as indicated by phosphor translocation studies in several plants. Sulfoxaflor is characterized by a water solubility ranging from 550 to 1,380 ppm. Sulfoxaflor has a low potential for volatilization from dry and wet surfaces (vapor pressure= 1.9×10^{-8} torr and Henry's Law constant= 1.2×10^{-11} atm m^3 $mole^{-1}$, respectively at 25 °C). Partitioning coefficient of sulfoxaflor from octanol to water (K_{ow} @ 20 C & pH 7= 6; Log K_{ow} = 0.802) suggests low potential for bioaccumulation. No fish bioconcentration study was provided due to the low K_{ow}, but sulfoxaflor is not expected to bioaccumulate in aquatic systems. Furthermore, sulfoxaflor is not expected to partition into the sediment due to low K_{oc} (7-74 mL/g).

Registrants tests indicate that hydrolysis, and both aqueous and soil photolysis are not expected to be important in sulfoxaflor dissipation in the natural environment. In a hydrolysis study, the parent was shown to be stable in acidic/neutral/alkaline sterilized aqueous buffered solutions (pH values of 5, 7 and 9). In addition, parent chemical as well as its major degradate, were shown to degrade relatively slowly by aqueous photolysis in sterile and natural pond water ($t^{½}$= 261 to >1,000 days). Furthermore, sulfoxaflor was stable to photolysis on soil surfaces. Sulfoxaflor is expected to biodegrade rapidly in aerobic soil (half-lives <1 day). Under aerobic aquatic conditions, biodegradation proceeded at a more moderate rate with half-lives ranging from 37 to 88 days. Under anaerobic soil conditions, the parent compound was metabolized with half-lives of 113 to 120 days while under anaerobic aquatic conditions the chemical was more persistent with half-lives of 103 to 382 days. In contrast to its short-lived parent, the major degradate is expected to be more persistent than its parent in aerobic/anaerobic aquatic systems and some aerobic soils. In other soils, less persistence is expected due to mineralization to CO_2 or the formation of other minor degradates.

In field studies, sulfoxaflor has shown similar vulnerability to aerobic bio-degradation in nine out of ten terrestrial field dissipation studies on bare-ground/cropped plots (half-lives were <2 days in nine cropped/bare soils in CA, FL, ND, ON and TX and was 8 days in one bare ground soil in TX). The chemical can be characterized by very high to high mobility (Kf_{oc} ranged from 11-72 mL g^{-1}). Rapid soil degradation is expected to limit chemical amounts that may potentially leach and contaminate ground water. Contamination of groundwater by sulfoxaflor will only be

expected when excessive rain occurs within a short period (few days) of multiple applications in vulnerable sandy soils. Contamination of surface water by sulfoxaflor is expected to be mainly related to drift and very little due to run-off. This is because drifted sulfoxaflor that reaches aquatic systems is expected to persist while that reaching the soil system is expected to degrade quickly with slight chance for it to run-off.

When sulfoxaflor is applied foliarly on growing crops it is intercepted by the crop canopy. Data presented above appear to indicate that sulfoxaflor enters the plant and is incorporated in the plant foliage with only limited degradation. It appears that this is the main source of the insecticide sulfoxaflor that would kill sap sucking insects. This is because washed-off sulfoxaflor, that reaches the soil system, is expected to degrade.

In summary, sulfoxaflor has a low potential for volatilization from dry and wet surfaces. This chemical is characterized by a relatively higher water solubility. Partitioning coefficient of sulfoxaflor from octanol to water suggests low potential for bioaccumulation in aquatic organisms such as fish. Sulfoxaflor is resistant to hydrolysis and photolysis but transforms quickly in soils. In contrast, sulfoxaflor reaching aquatic systems by drift is expected to degrade rather slowly. Partitioning of sulfoxaflor to air is not expected to be important due to the low vapor pressure and Henry's Law constant for sulfoxaflor. Exposure in surface water results from drifted parent as only minor amounts is expected to run-off only when rainfall and/or irrigation immediately follow application. The use of this insecticide is not expected to significantly adversely impact Texas ecosystems with use according to the Section 18 label with this application. Of course, caution is needed to prevent exposure to water systems because of toxicity issues to aquatic invertebrates. As stated on the Section 3 label, this product should never be applied directly to water, to areas where surface water is present or to intertidal areas below the mean water mark. Do not contaminate water when disposing of equipment rinsates.

Endangered and Threatened Species in Texas

No impacts are expected on endangered and threatened species by this very limited use of this insecticide as delineated in the Section 18 application. Sulfoxaflor demonstrates a very favorable ecotoxicity and fate profile as stated above and should not directly impact any protected mammal, fish, avian, or plant species. This product does adversely affect insects and aquatic invertebrates, especially bees, but the limited exposure to these species should not negatively affect endangered and threatened species in Texas. As always, the label precautions need be strictly adhered to.

SECTION 166.20(a)(8): COORDINATION WITH OTHER AFFECTED STATE OR FEDERAL AGENCIES

The following state/federal agencies were notified of the Texas Department of Agriculture's (TDA's) actions to submit an application for a specific exemption to EPA

- Texas Commission on Environmental Quality (TCEQ), Air Quality Control
- Texas Commission on Environmental Quality (TCEQ), Water Quality
- Texas Parks and Wildlife Department
- U.S. Fish and Wildlife Department

SECTION 166.20(a)(9): ACKNOWLEDGEMENT BY THE REGISTRANT

Dow AgroScience has been notified of this agency's intent regarding this application (see attached letter of support). They have also provided a copy of a label with the use directions for this use (although this use is dependent upon the approval of this section-18 by EPA).

SECTION 166.20(a)(10): DESCRIPTION OF PROPOSED ENFORCEMENT PROGRAM

The State Legislature has endowed TDA with the authority to regulate the distribution, storage, sale, use and disposal of pesticides in the state of Texas. In addition, the EPA/TDA grant enforcement agreement provides the Department with the authority to enforce the provisions of the FIFRA, as amended, within the state. Therefore, the Department is no lacking in authority to enforce the provisions of an EPA Pesticide Enforcement Specialist will make a number of random, unannounced calls on applicators to check for compliance with provisions of the specific exemption. If violations are discovered appropriate enforcement will be taken.

SECTION 166.20(a)(11): REPEAT USES

This is the first time TDA has applied for this specific exemption.

SECTION 166.20(b)(1): NAME OF THE PEST

Melanaphis sp. (thought to be *Melanaphis sacchari*)

SECTION 166.20(b)(2): DISCUSSION OF EVENTS OR CIRCUMSTANCES WHICH BROUGHT ABOUT THE EMERGENCY SITUATION

In the fall of 2013, unusually high populations of aphids were discovered near Beaumont, Texas, by Dr. Mo Way. The population was soon detected along the Texas Gulf Coast and the Texas Lower Rio Grande Valley. The aphid soon spread and was identified in Louisiana, Mississippi and Oklahoma. The aphid was sent to U.S.D.A. identifiers and was identified as *Melanaphis sacchari* (sugarcane aphid), but is believed to be a new biotype of the sugarcane aphid as scientist have been unable to establish the aphid in sugarcane.

The populations are believed to begin feeding on the lower leaves of sorghum plants then rapidly advancing to the upper leaves and even colonizing in the sorghum head. Currently, Mexican scientist reported high populations of the aphid in Mexico in Rio Bravo and San Fernando this

past fall. Unsuccessful treatments including chlorpyrifos, methomyl and cypermethrin were applied in Mexico during 2013. Entire fields have been lost in Mexico and Texas A&M AgriLife scientist fear populations will rapidly spread northward during the 2014 growing season. Texas A&M AgriLife scientist and agronomy scouts have been inspecting fields and have seen sugarcane aphid populations are surviving this winter in the Lower Rio Grande Valley on volunteer grain sorghum and johnsongrass. The survival of these populations as well as the outbreak in northern Mexico could be disastrous for the 2014 U.S. sorghum crop.

Natural enemies have been observed feeding on the sugarcane aphid, but they apparently had difficulty responding quickly enough to prevent damage in 2013. Progress is being made on developing resistant/tolerant sorghum lines, but sufficient quantities of agronomically acceptable cultivars will not be available for the 2014 planting season.

SECTION 166.20(b)(3): DISCUSSION OF ANTICIPATED RISKS TO ENDANGERED OR THREATENED SPECIES, BENIFICIAL ORGANISMS, OR THE ENVIRONMENT

As discussed previously, it is not anticipated that there should be any anticipated risks to endangered or threatened species, beneficial organisms or the environment if the application is made according to the section 18 use directions.

SECTION 166.20(b)(4): DISCUSSION OF SIGNIFICANT ECONOMIC LOSS

Growers widely reported 20 to 50% yeild loss in infested fields. Scouts have observed the aphid sucessfully overwintering in volunteer soghum in the South Texas region, increasing the probability of a more widespread outbreak in 2014. Dr. Mo Way reported one producer in Chambers County did not harvest his grain sorghum because the aphid damage was so severe. He also reported a producer in Liberty County suffered a yield loss of 50% in an infested field as compared to another field where the aphid did not damage the crop. Dr. Raul Villanueva reported two seed increase plots at the Texas A&M AgriLife Center in Weslaco were completely lost due to the aphid. Dr. Villanueva has also received information from Mexico that research plots at the Rio Bravo Agricultural Station were all devastated by this aphid and the growers had up to 60% loss in San Fernando and Ciudad Victoria. These locations are 2 and 4 hours from the Texas border respectively.

Dow AgroSciences

Dow AgroSciences LLC 9330 Zionsville Road Indianapolis, IN 46268-1054 USA

Transform™ WG

EPA Reg. No. 62719-625

Section 18 Specific Exemption

Control of Sugarcane Aphid (*Melanaphis sacchari*) in Sorghum

(For Distribution and Use Only in Texas)

- **This Specific Exemption is effective XXXX through XXXX.**
- This labeling must be in the possession of the user at the time of application.
- Read the label affixed to the container for Transform™ WG insecticide before applying. Carefully follow all precautionary statements and applicable use directions.
- Use of Transform WG according to this supplemental labeling is subject to all use precautions and limitations imposed by the label affixed to the container for Transform WG.

Directions for Use

Pests and Application Rates:

Pests	Transform WG (oz/acre)
Sugracane aphid	0.75 – 1.5 (0.023 – 0.047 lb ai/acre)

Application Timing: Treat in accordance with local economic thresholds. Consult your Dow AgroSciences representative, cooperative extension service, certified crop advisor or state agricultural experiment station for any additional local use recommendations for your area.

Application Rate: Use a higher rate in the rate range for heavy pest populations.

Restrictions:

- **Preharvest Interval:** Do not apply within 7 days of harvest for grain or 14 days of harvest for forage or stover.
- **Minimum Treatment Interval:** Do not make applications less than 14 days apart.
- Do not make more than two applications per acre per year.
- Do not apply more than a total of 3.0 oz of Transform WG (0.09 lb ai of sulfoxaflor) per acre per year.

®™Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

R396-015
Approved: __/__/__
Initial printing.

Specimen Label

Dow AgroSciences

Transform® WG

INSECTICIDE

®™Trademark of The Dow Chemical Company ("Dow") or an affiliated company of Dow

For control or suppression of aphids, fleahoppers, plant bugs, stink bugs, whiteflies and certain psyllids, scales, and thrips in barley, canola (rapeseed), cotton, root and tuber vegetables, potatoes, soybean, succulent, edible podded, and dry beans, triticale, and wheat.

Group	4C	INSECTICIDE

Active Ingredient:
sulfoxaflor 50%
Other Ingredients..... 50%
Total..... 100%

Contains 50% active ingredient on a weight basis.

Precautionary Statements

Hazard to Humans and Domestic Animals

EPA Reg. No. 62719-625

DANGER

Corrosive . Causes Irreversible Eye Damage • Harmful If Swallowed

Do not get in eyes or on clothing.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Protective eyewear

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

First Aid

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

First Aid (Cont.)

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.

Environmental Hazards

This product is highly toxic to bees exposed through contact during spraying and while spray droplets are still wet. This product may be toxic to bees exposed to treated foliage for up to 3 hours following application. Toxicity is reduced when spray droplets are dry.

Risk to managed bees and native pollinators from contact with pesticide spray or residues can be minimized when applications are made before 7:00 am or after 7:00 pm local time or when the temperature is below 55° F at the site of application.

Refer to the Directions for Use for crop specific restrictions and additional advisory statements to protect pollinators.

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters.

Directions for Use

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.
Read all Directions for Use carefully before applying.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your state or tribe, consult the agency responsible for pesticide regulation.

Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Shoes plus socks

Non-Agricultural Use Requirements

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Do not enter or allow others to enter the treated area until sprays have dried.

Storage and Disposal

Do not contaminate water, food or feed by storage or disposal.
Pesticide Storage: Store in original container only.
Pesticide Disposal: Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

Nonrefillable rigid containers 5 gallons or less:
Container Handling: Nonrefillable container. Do not reuse or refill this container.
Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after

Storage and Disposal (Cont.)

the flow begins to drip. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Nonrefillable nonrigid containers:
Container Handling: Nonrefillable container. Do not reuse or refill this container. Completely empty bag into application equipment. Then offer for recycling if available, or dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Refillable rigid containers larger than 5 gal:
Container Handling: Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water and, if possible, spray all sides while adding water. If practical, agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Nonrefillable rigid containers larger than 5 gal:
Container Handling: Nonrefillable container. Do not reuse or refill this container.
Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Then offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Product Information

Carefully read, understand and follow label use rates and restrictions. Apply the amount specified in the following tables with properly calibrated aerial or ground spray equipment. Prepare only the amount of spray solution required to treat the measured acreage. The low rates may be used for light infestations of the target pests and the higher rates for moderate to heavy infestations. Transform™ WG insecticide may be applied in either dilute or concentrate sprays so long as the application equipment is calibrated and adjusted to deliver thorough, uniform coverage. Use the specified amount of Transform WG per acre regardless of the spray volume used.

Use Precautions

Integrated Pest Management (IPM) Programs
Transform WG is recommended for IPM programs in labeled crops. Apply Transform WG when field scouting indicates target pest densities have reached the economic threshold, i.e., the point at which the insect population must be reduced to avoid economic losses beyond the cost of control. Other than reducing the target pest species as a food source, Transform WG does not have a significant impact on most parasitic insects or the natural predaceous arthropod complex in treated crops, including big-eyed bugs, ladybird beetles, flower bugs, lacewings, minute pirate bugs, damsel bugs, assassin bugs, predatory mites or spiders. The feeding activities of these beneficials will aid in natural control of other insects and reduce the likelihood of secondary pest outbreaks. If Transform WG is tank mixed with any insecticide that reduces its selectivity in preserving beneficial predatory insects, the full benefit of Transform WG in an IPM program may be reduced.

Insecticide Resistance Management (IRM)
Transform WG contains a Group 4C insecticide. Insect biotypes with acquired resistance to Group 4C insecticides may eventually dominate the insect population if Group 4C insecticides are used repeatedly in the same field or area, or in successive years as the primary method of control for targeted species. This may result in partial or total loss of control of those species by Transform WG or other Group 4C insecticides.

To delay development of insecticide resistance, the following practices are recommended:

- Avoid consecutive use of insecticides on succeeding generations with the same mode of action (same insecticide subgroup, 4C) on the same insect species.
- Consider tank mixtures or premix products containing insecticides with different modes of action (different insecticide groups) provided the products are registered for the intended use.
- Base insecticide use upon comprehensive IPM programs.
- Monitor treated insect populations in the field for loss of effectiveness.
- Do not treat seedling plants grown for transplant in greenhouses, shade houses, or field plots.
- Contact your local extension specialist, certified crop advisor, and/or manufacturer for insecticide resistance management and/or IPM recommendations for the specific site and resistant pest problems.
- For further information or to report suspected resistance, you may contact Dow AgroSciences by calling 800-258-3033.

Mixing Directions

Application Rate Reference Table

Application Rate of Transform WG (oz/acre)	Active Ingredient Equivalent (lb ai/acre)
0.75	0.023
1	0.031
1.5	0.047
1.75	0.055
2.25	0.071
2.75	0.086

Transform WG – Alone
Fill the spray tank with water to about 1/2 of the required spray volume. Start agitation and add the required amount of Transform WG. Continue agitation while mixing and filling the spray tank to the required spray volume. Maintain sufficient agitation during application to ensure uniformity of the spray mix. Do not allow water or spray mixture to back-siphon into the water source.

Transform WG - Tank Mix
When tank mixing Transform WG with other materials, conduct compatibility test (jar test) using relative proportions of the tank mix ingredients prior to mixing ingredients in the spray tank. If foliar fertilizers are used, the jar test should be repeated with each batch of fertilizer utilizing the mixing water source. Vigorous, continuous agitation during mixing, filling and throughout application is required for all tank mixes. Sparger pipe agitators generally provide the most effective agitation in spray tanks. To prevent foaming in the spray tank, avoid stirring or splashing air into the spray mixture.

Mixing Order for Tank Mixes: Fill the spray tank with water to 1/4 to 1/3 of the required spray volume. Start agitation. Add different formulation types in the order indicated below, allowing time for complete dispersion and mixing after addition of each product. Allow extra dispersion and mixing time for dry flowable products.

Add different formulation types in the following order:
1. Transform WG and other water dispersible granules
2. Wettable powders
3. Suspension concentrates and other liquids

Maintain agitation and fill spray tank to 3/4 of total spray volume. Then add:
4. Emulsifiable concentrates and water-based solutions
5. Spray adjuvants, surfactants and oils
6. Foliar fertilizers

Finish filling the spray tank. Maintain continuous agitation during mixing, final filling and throughout application. If spraying and agitation must be stopped before the spray tank is empty, the materials may settle to the bottom. Settled materials must be resuspended before spraying is resumed. A sparger agitator is particularly useful for this purpose.

Premixing: Dry and flowable formulations may be premixed with water (slurried) and added to the spray tank through a 20 to 35 mesh screen. This procedure assures good initial dispersion of these formulation types.

Application Directions

Not for Residential Use

Do not apply Transform WG in greenhouses or other enclosed structures used for growing crops.

Proper application techniques help ensure thorough spray coverage and correct dosage for optimum insect control. Apply Transform WG as a foliar spray at the rate indicated for target pest. The following directions are provided for ground and aerial application of Transform WG. Attention should be given to sprayer speed and calibration, wind speed, and foliar canopy to ensure adequate spray coverage.

Spray Drift Management

Wind: To reduce off-target drift and achieve maximum performance, apply when wind velocity favors on-target product deposition.

Temperature Inversions: Do not make ground or aerial applications during a temperature inversion. Temperature inversions are characterized by stable air and increasing temperatures with height above the ground. Mist or fog may indicate the presence of an inversion in humid areas. The applicator may detect the presence of an inversion by producing smoke and observing a smoke layer near the ground surface.

Droplet Size: Use only medium or coarser spray nozzles (for ground and non-ULV aerial application) according to ASABE (S-572.1) definition for standard nozzles. In conditions of low humidity and high temperatures, applicators should use a coarser droplet size except where indicated for specific crops.

Ground Application

To prevent drift from groundboom applications, apply using a nozzle height of no more than 4 feet above the ground or crop canopy. Shut off the sprayer when turning at row ends. Risk of exposure to sensitive aquatic areas can be reduced by avoiding applications when wind directions are toward the aquatic area.

Row Crop Application

Use calibrated power-operated ground spray equipment capable of providing uniform coverage of the target crop. Orient the boom and nozzles to obtain uniform crop coverage. Use a minimum of 5 to 10 gallons per acre, increasing volume with crop size and/or pest pressure. Use hollow cone, twin jet flat fan nozzles or other atomizer suitable for insecticide spraying to provide a fine to coarse spray quality (per ASABE S-572.1, see nozzle catalogs). Under certain conditions, drop nozzles may be required to obtain complete coverage of plant surfaces. Follow manufacturer's specifications for ideal nozzle spacing and spray pressure. Minimize boom height to optimize uniformity of coverage and maximize deposition (optimize on-target deposition) to reduce drift.

Aerial Application

Apply in a minimum spray volume of 3 gallons per acre. Mount the spray boom on the aircraft so as to minimize drift caused by wing tip or rotor vortices. Use the minimum practical boom length and do not exceed 75% of the wing span or 80% of the rotor diameter. Flight speed and nozzle orientation must be considered in determining droplet size. Spray must be released at the lowest height consistent with pest control and flight safety. Do not release spray at a height greater than 10 feet above the crop canopy unless a greater height is required for aircraft safety. When applications are made with a crosswind, the swath will be displaced downwind. The applicator must compensate for this displacement at the downwind edge of the application area by adjusting the path of the aircraft upwind.

Spray Adjuvants

The addition of agricultural adjuvants to sprays of Transform WG may improve initial spray deposits, redistribution and weatherability. Select adjuvants that are recommended and registered for your specific use pattern and follow their use directions. When an adjuvant is to be used with this product, Dow AgroSciences recommends the use of a Chemical Producers and Distributors Association certified adjuvant. Always add adjuvants last in the mixing process.

Chemigation Application

Transform WG may be applied through properly equipped chemigation systems for insect control in potatoes. Do not apply Transform WG by chemigation to other crops.

Use Directions for Chemigation: Transform WG may be applied through overhead sprinkler irrigation systems that will apply water uniformly, including center pivot, lateral move, end tow, side (wheel) roll, traveler, solid set, micro sprinkler, or hand move. Do not apply this product through any other type of irrigation system. Sprinkler systems that deliver a low coefficient of uniformity such as certain water drive units are not recommended.

For continuously moving systems, the mixture containing Transform WG must be injected continuously and uniformly into the irrigation water line as the sprinkler is moving. If continuously moving irrigation equipment is used, apply in no more than 0.25 inch of water. For irrigation systems that do not move during operation, apply in no more than 0.25 inch of irrigation immediately before the end of the irrigation cycle.

Chemigation Preparation: The following use directions are to be followed when this product is applied through irrigation systems. Thoroughly clean the chemigation system and tank of any fertilizer or chemical residues, and dispose of the residues according to state and federal laws. Flush the injection system with soap or a cleaning agent and water. Determine the amount of Transform WG needed to cover the desired acreage. Mix according to instructions in the Mixing Directions section above. Continually agitate the mixture during mixing and application.

Chemigation Equipment Calibration: In order to calibrate the irrigation system and injector to apply the mixture containing Transform WG, determine the following: 1) Calculate the number of acres irrigated by the system; 2) Calculate the amount of product required and premix; 3) Determine the irrigation rate and determine the number of minutes for the system to cover the intended treatment area; 4) Calculate the total gallons of insecticide mixture needed to cover the desired acreage. Divide the total gallons of insecticide mixture needed by the number of minutes (minus time to flush out) to cover the treatment area. This value equals the gallons per minute output that the injector or eductor must deliver. Convert the gallons per minute to milliliters or ounces per minute if needed. Calibrate the injector system with the system in operation at the desired irrigation rate. It is suggested that the injection pump/system be calibrated at least twice before operation, and the system should be monitored during operation.

Chemigation Operation: Start the water pump and irrigation system, and let the system achieve the desired pressure and speed before starting the injector. Check for leaks and uniformity and make repairs before any chemigation takes place. Start the injection system and calibrate according to manufacturer's specifications. This procedure is necessary to deliver the desired rate per acre in a uniform manner. When the application is finished, allow the entire irrigation and injection system to be thoroughly flushed clean before stopping the system.

Chemigation Precautions:

- Lack of effectiveness or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.
- If you have questions about calibration, contact state extension service specialists, equipment manufacturers or other experts.
- Do not connect an irrigation system used for pesticide application (including greenhouse systems) to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place with current certification. Specific local regulations may apply and must be followed.
- A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall operate the system and make necessary adjustments should the need arise and continuously monitor the injection.
- Do not apply when wind speed favors drift beyond the area intended for treatment. End guns must be turned off during the application if they irrigate nontarget areas.
- Do not allow irrigation water to collect or run off and pose a hazard to livestock, wells, or adjoining crops.
- Do not enter treated area during the reentry interval specified in the Agricultural Use Requirements section of this label unless required PPE is worn.
- Do not apply through sprinkler systems that deliver a low coefficient of uniformity such as certain water drive units.

Chemigation Specific Equipment Requirements:

- The system must contain an air gap or approved backflow prevention device, or approved functional check valve, vacuum relief valve (including inspection port), and low-pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow. Refer to the American Society of Agricultural Engineer's Engineering Practice 409 for more information or state specific regulations.

- The pesticide injection line must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection chemical supply.
- A pesticide injection pump must also contain a functional interlock, e.g., mechanical or electrical to shut off chemical supply when the irrigation system is either automatically or manually shut down.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection when the water pressure drops too low or water flow stops.
- Use of public water supply requires approval of a backflow prevention device or air gap (preferred) by both state and local authorities.
- Systems must use a metering device, such as a positive displacement injection pump (or flow meter on eductor) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock. An electric powered pump must meet Section 675 for "Electrically Driven or Controlled Irrigation Machines" NEC 70.
- To insure uniform mixing of the insecticide in the water line, inject the mixture in the center of the pipe diameter or just ahead of an elbow or tee in the irrigation line so that the turbulence created at those points will assist in mixing. The injection point must be located after all backflow prevention devices on the water line.
- The tank holding the insecticide mixture should be free of rust, fertilizer, sediment, and foreign material, and equipped with an in-line strainer situated between the tank and the injection point.

Rotational Crop Restrictions

The following rotational crops may be planted at intervals defined below following the final application of Transform WG at specified rates for a registered use.

Crop	Re-Planting Interval
crops registered use	no restrictions
all other crops grown for food or feed	30 days

Use Directions

Barley, Triticale and Wheat

Pests and Application Rates:

Pests	Transform WG (oz/acre)
greenbug	0.75 (0.023 lb ai/acre)

Application Timing: Treat in accordance with local economic thresholds. Consult your Dow AgroSciences representative, cooperative extension service, certified crop advisor or state agricultural experiment station for any additional local use recommendations for your area.

Application Rate: Use a higher rate in the rate range for heavy pest populations.

Restrictions:
- **Preharvest Interval:** Do not apply within 14 days of grain or straw harvest or within 7 days of grazing, or forage, fodder, or hay harvest.
- **Minimum Treatment Interval:** Do not make applications less than 14 days apart.
- Do not make more than two applications per crop.
- Do not apply more than a total of 2.8 oz of Transform WG (0.09 lb ai of sulfoxaflor) per acre per year.
- Do not apply this product at any time between 3 days prior to bloom and until after petal fall.

Canola (Rapeseed) (Subgroup 20A)[1]

[1]Canola (rapeseed) (subgroup 20A) including borage, canola, crambe, cuphea, echium, flax seed, gold of pleasure, hare's ear mustard, lesquerella, lunaria, meadowfoam, milkweed, mustard seed, oil radish, poppy seed, rapeseed, sesame, sweet rocket, and cultivars, varieties and/or hybrids of these

Pests and Application Rates:

Pests	Transform WG (oz/acre)
Aphids	0.75 (0.023 lb ai/acre)

Application Timing: Treat in accordance with local economic thresholds. Consult your Dow AgroSciences representative, cooperative extension service, certified crop advisor or state agricultural experiment station for any additional local use recommendations for your area.

Application Rate: Use a higher rate in the rate range for heavy pest populations.

Restrictions:
- **Preharvest Interval:** Do not apply within 14 days of grain, straw, forage, fodder, or hay harvest.
- **Minimum Treatment Interval:** Do not make applications less than 14 days apart.
- Do not make more than two applications per year.
- Do not apply more than a total of 1.5 oz of Transform WG (0.046 lb ai of sulfoxaflor) per acre per year.
- Do not apply this product at any time between 3 days prior to bloom and until after petal fall.

Cotton

Pests and Application Rates:

Pests	Transform WG (oz/acre)
cotton aphid	0.75 – 1.0 (0.023 – 0.031 lb ai/acre)
cotton fleahopper	0.75 – 1.5 (0.023 – 0.047 lb ai/acre)
tarnished plant bug western tarnished plant bug	1.5 – 2.25 (0.047 – 0.071 lb ai/acre)
sweetpotato whitefly, silverleaf whitefly	2.0 – 2.25 (0.063 – 0.071 lb ai/acre)
Suppression only: brown stink bug, southern green stink bug, thrips	2.0 – 2.25 (0.063 – 0.071 lb ai/acre)

Advisory Pollinator Statement: Notifying known beekeepers within 1 mile of the treatment area 48 hours before the product is applied will allow them to take additional steps to protect their bees.

Application Timing: Treat in accordance with local economic thresholds. Consult your Dow AgroSciences representative, cooperative extension service, certified crop advisor or state agricultural experiment station for any additional local use recommendations for your area.

Application Rate: Use a higher rate in the rate range for heavy pest populations. Two applications may be required for optimum tarnished plant bug control under high pest pressure or heavy immigration of plant bugs from other crops.

Restrictions:
- **Preharvest Interval:** Do not apply within 14 days of harvest.
- **Minimum Treatment Interval:** Do not make applications less than 5 days apart.
- Do not make more than four applications per acre per year.
- Do not make more than two consecutive applications per crop.
- Do not apply more than a total of 8.5 oz of Transform WG (0.266 lb ai of sulfoxaflor) per acre per year.

Root and Tuber Vegetables (Crop Groups 1A and 1B)[1]

[1]Root and tuber vegetables (crop group 1) including bitter black salsify, carrot, celeriac, chayote (root), chicory, chufa, daikon, dasheen, edible burdock, garden beet, ginseng, horseradish, lobok, lo pak, oriental radish, parsnip, radish, red Chinese radish, red Japanese radish, rutabaga, salsify, skirret, Spanish salsify, sugar beet, turnip, turnip-rooted chervil, turnip-rooted parsley, white Chinese radish, white Japanese radish, winter radish, and other cultivars or hybrids of these

Pests and Application Rates:

Pests	Transform WG (oz/acre)
Aphids	0.75 – 1.5 (0.023 – 0.047 lb ai/acre)
Leafhoppers	1.5 – 2.75 (0.047 – 0.086 lb ai/acre)
silverleaf whitefly sweetpotato whitefly	2.0 – 2.75 (0.063 – 0.086 lb ai/acre)

Application Timing: Treat in accordance with local economic thresholds. Consult your Dow AgroSciences representative, cooperative extension service, certified crop advisor or state agricultural experiment station for any additional local use recommendations for your area. Two applications may be required for optimum control of whiteflies.

Application Rate: Use a higher rate in the rate range for heavy pest populations.

Restrictions:
- **Preharvest Interval:** Do not apply within 7 days of harvest.
- **Minimum Treatment Interval:** Do not make applications less than 7 days apart.
- Do not make more than four applications per crop.
- Do not make more than two consecutive applications per crop.
- Do not apply more than a total of 8.5 oz of Transform WG (0.266 lb ai of sulfoxaflor) per acre per year.
- Do not apply this product at any time between 3 days prior to bloom and until after petal fall.

Potatoes (Crop Groups 1C and 1D)[1]

[1]Root and tuber vegetables (crop group 1) including arracacha, arrowroot, bitter black salsify, bitter cassava, chayote (root), Chinese artichoke, chufa, daikon, dasheen, edible canna, ginger, Jerusalem artichoke, leren, lobok, lo pak, potato, radish, sweet cassava, sweet potato, tanier, true yam, turmeric, yam, yam bean, and other cultivars or hybrids of these

Pests and Application Rates:

Pests	Transform WG (oz/acre)
aphids	0.75 – 1.5 (0.023 – 0.047 lb ai/acre)
Leafhoppers	1.5 – 2.25 (0.047 – 0.071 lb ai/acre)
Potato psyllid silverleaf whitefly sweetpotato whitefly	2.0 – 2.25 (0.063 – 0.071 lb ai/acre)

Application Timing: Treat in accordance with local economic thresholds. Consult your Dow AgroSciences representative, cooperative extension service, certified crop advisor or state agricultural experiment station for any additional local use recommendations for your area. Two applications may be required for optimum control of whiteflies.

Application Rate: Use a higher rate in the rate range for heavy pest populations.

Restrictions:
- **Preharvest Interval:** Do not apply within 7 days of harvest.
- **Minimum Treatment Interval:** Do not make applications less than 14 days apart.
- Do not make more than four applications per crop.
- Do not make more than two consecutive applications per crop.
- Do not apply more than a total of 8.5 oz of Transform WG (0.266 lb ai of sulfoxaflor) per acre per year.

Soybean

Pests and Application Rates:

Pests	Transform WG (oz/acre)
soybean aphid	0.75 – 1.0 (0.023 – 0.031 lb ai/acre)
Suppression only: brown stink bug southern green stink bug	2.0 – 2.25 (0.063 – 0.071 lb ai/acre)

Application Timing: Treat in accordance with local economic thresholds. Consult your Dow AgroSciences representative, cooperative extension service, certified crop advisor or state agricultural experiment station for any additional local use recommendations for your area.

Application Rate: Use a higher rate in the rate range for heavy pest populations.

Restrictions:
- **Preharvest Interval:** Do not apply within 7 days of grain, forage or hay harvest.
- **Minimum Treatment Interval:** Do not make applications less than 14 days apart.
- Do not make more than four applications per crop.
- Do not make more than two consecutive applications per crop.
- Do not apply more than a total of 8.5 oz of Transform WG (0.266 lb ai of sulfoxaflor) per acre per year.
- No more than two applications may be made to soybean forage.

Succulent, Edible Podded and Dry Beans[1]

[1]Succulent, edible podded, and dry beans including adzuki bean, asparagus bean, bean, blackeyed pea, broad bean, chickpea, Chinese longbean, cowpea, fava bean, field bean, garbanzo bean, grain lupine, green lima bean, jackbean, kidney bean, lablab bean, lima bean, moth bean, mung bean, navy bean, pinto bean, rice bean, runner bean, snap bean, soybean (immature seed), sweet lupine, sword bean, tepary bean, wax bean, white lupine, white sweet lupine, yardlong bean

Pests and Application Rates:

Pests	Transform WG (oz/acre)
aphids	0.75 – 1.0 (0.023 – 0.031 lb ai/acre)
plant bugs	1.5 – 2.25 (0.047 – 0.071 lb ai/acre)
Suppression only: brown stink bug southern green stink bug	2.0 – 2.25 (0.063 – 0.071 lb ai/acre)
thrips (suppression only)	2.25 (0.071 lb ai/acre)

Application Timing: Treat in accordance with local economic thresholds. Consult your Dow AgroSciences representative, cooperative extension service, certified crop advisor or state agricultural experiment station for any additional local use recommendations for your area.

Application Rate: Use a higher rate in the rate range for heavy pest populations.

Restrictions:
- **Preharvest Interval:** Do not apply within 7 days of harvest.
- **Minimum Treatment Interval:** Do not make applications less than 14 days apart.
- Do not make more than four applications per crop.
- Do not make more than two consecutive applications per crop.
- Do not apply more than a total of 8.5 oz of Transform WG (0.266 lb ai of sulfoxaflor) per acre per year.

Terms and Conditions of Use

If terms of the following Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. Otherwise, use by the buyer or any other user constitutes acceptance of the terms under Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies.

Warranty Disclaimer

Dow AgroSciences warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. Dow AgroSciences MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Plant injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperature, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Dow AgroSciences or the seller. To the extent consistent with applicable law all such risks shall be assumed by buyer.

Limitation of Remedies

To the extent permitted by law, the exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at Dow AgroSciences' election, one of the following:

1. Refund of purchase price paid by buyer or user for product bought, or
2. Replacement of amount of product used

Dow AgroSciences shall not be liable for losses or damages resulting from handling or use of this product unless Dow AgroSciences is promptly notified of such loss or damage in writing. In no case shall Dow AgroSciences be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer, Inherent Risks of Use, and Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Dow AgroSciences or the seller is authorized to vary or exceed the terms of the Warranty Disclaimer or Limitation of Remedies in any manner.

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Produced for
Dow AgroSciences LLC
9330 Zionsville Road
Indianapolis, IN 46268

Label Code: D02-396-001
Initial printing
LOES Number: 010-02282

EPA accepted 05/06/13

Dow AgroSciences LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Product Name
TRANSFORM* WG Insecticide

COMPANY IDENTIFICATION
Dow AgroSciences LLC
A Subsidiary of The Dow Chemical Company
9330 Zionsville Road
Indianapolis, IN 46268-1189
USA

Customer Information Number: 800-992-5994
SDSQuestion@dow.com

EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact: 800-992-5994
Local Emergency Contact: 352-323-3500

2. Hazards Identification

Emergency Overview
Color: White
Physical State: Granules.
Odor: Mild
Hazards of product:

CAUTION! May cause eye irritation. May form explosive dust-air mixture. Isolate area. Slipping hazard. Highly toxic to fish and/or other aquatic organisms.

OSHA Hazard Communication Standard
This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential Health Effects
Eye Contact: May cause slight eye irritation. May cause slight corneal injury.
Skin Contact: Essentially nonirritating to skin.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

5. Fire Fighting Measures

Suitable extinguishing media
Water. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers.

Special hazards arising from the substance or mixture
Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Nitrogen oxides. Carbon monoxide. Carbon dioxide.
Unusual Fire and Explosion Hazards: Do not permit dust to accumulate. When suspended in air dust can pose an explosion hazard. Minimize ignition sources. If dust layers are exposed to elevated temperatures, spontaneous combustion may occur. Dense smoke is produced when product burns.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Consider feasibility of a controlled burn to minimize environment damage. Foam fire extinguishing system is preferred because uncontrolled water can spread possible contamination. Soak thoroughly with water to cool and prevent re-ignition. Cool surroundings with water to localize fire zone. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.
Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Refer to Section 7, Handling, for additional precautionary measures. Spilled material may cause a slipping hazard. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.
Methods and materials for containment and cleaning up: Contain spilled material if possible. Small spills: Sweep up. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information. Large spills: Contact Dow AgroSciences for clean-up assistance.

7. Handling and Storage

Handling
General Handling: Keep out of reach of children. Keep away from heat, sparks and flame. No smoking, open flames or sources of ignition in handling and storage area. Avoid contact with eyes, skin, and clothing. Do not swallow. Avoid breathing dust or mist. Wash thoroughly after handling. Use with adequate ventilation. Good housekeeping and controlling of dusts are necessary for safe handling of product. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Storage
Store in a dry place. Store in original container. Do not store near food, foodstuffs, drugs or potable water supplies.

	Upper: Not applicable
Vapor Pressure	Not applicable
Vapor Density (air = 1)	Not applicable
Specific Gravity (H2O = 1)	No test data available
Solubility in water (by weight)	No test data available
Partition coefficient, n-octanol/water (log Pow)	No data available for this product. See Section 12 for individual component data.
Autoignition Temperature	*EC Method A16* none below 400degC
Decomposition Temperature	No test data available
Kinematic Viscosity	not applicable
Explosive properties	Not explosive *Mechanical Impact @ 20.25 inches*
Oxidizing properties	No significant increase (>5C) in temperature. *EPA OPPTS 830.6314 (Oxidizing or Reducing Action)*
Bulk Density	0.42 g/ml @ 24.1 °C *CIPAC MT 33*

10. Stability and Reactivity

Reactivity
No dangerous reaction known under conditions of normal use.
Chemical stability
Thermally stable at typical use temperatures.

Possibility of hazardous reactions
Polymerization will not occur.
Conditions to Avoid: Exposure to elevated temperatures can cause product to decompose.

Incompatible Materials: None known.
Hazardous decomposition products
Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Nitrogen oxides. Toxic gases are released during decomposition.

11. Toxicological Information

Acute Toxicity
Ingestion
As product: LD50, Rat > 2,000 mg/kg
No deaths occurred at this concentration.
Dermal
As product: LD50, Rat > 5,000 mg/kg
No deaths occurred at this concentration.
Inhalation
As product: LC50, 4 h, Aerosol, Rat, male and female > 5.35 mg/l
Eye damage/eye irritation
May cause slight eye irritation. May cause slight corneal injury.
Skin corrosion/irritation
Essentially nonirritating to skin.
Sensitization
Skin
Did not demonstrate the potential for contact allergy in mice.
Respiratory
No relevant data found.
Repeated Dose Toxicity
For the active ingredient(s): In animals, effects have been reported on the following organs: Liver.

Data for Component: **Sulfoxaflor**
Bioaccumulation: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).
Partition coefficient, n-octanol/water (log Pow): 3.14 Estimated.
Bioconcentration Factor (BCF): 51; fish; Estimated.
Data for Component: **Kaolin**
Bioaccumulation: Partitioning from water to n-octanol is not applicable.
Data for Component: **Titanium dioxide**
Bioaccumulation: Partitioning from water to n-octanol is not applicable.

Mobility in soil

Data for Component: **Sulfoxaflor**
Mobility in soil: Potential for mobility in soil is slight (Koc between 2000 and 5000).
Partition coefficient, soil organic carbon/water (Koc): 2,200 Estimated.
Data for Component: **Kaolin**
Mobility in soil: No data available.
Data for Component: **Titanium dioxide**
Mobility in soil: No data available.

13. Disposal Considerations

If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

14. Transport Information

DOT Non-Bulk
NOT REGULATED

DOT Bulk
NOT REGULATED

IMDG
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Technical Name: Sulfoxaflor
Hazard Class: 9 **ID Number:** UN3077 **Packing Group:** PG III
EMS Number: F-A,S-F
Marine pollutant.: Yes

ICAO/IATA
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Technical Name: Sulfoxaflor
Hazard Class: 9 **ID Number:** UN3077 **Packing Group:** PG III
Cargo Packing Instruction: 956
Passenger Packing Instruction: 956
Additional Information

MARINE POLLUTANT

Revision

Identification Number: 1042484 / 1016 / Issue Date 07/18/2011 / Version: 1.1
DAS Code: GF-2372
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

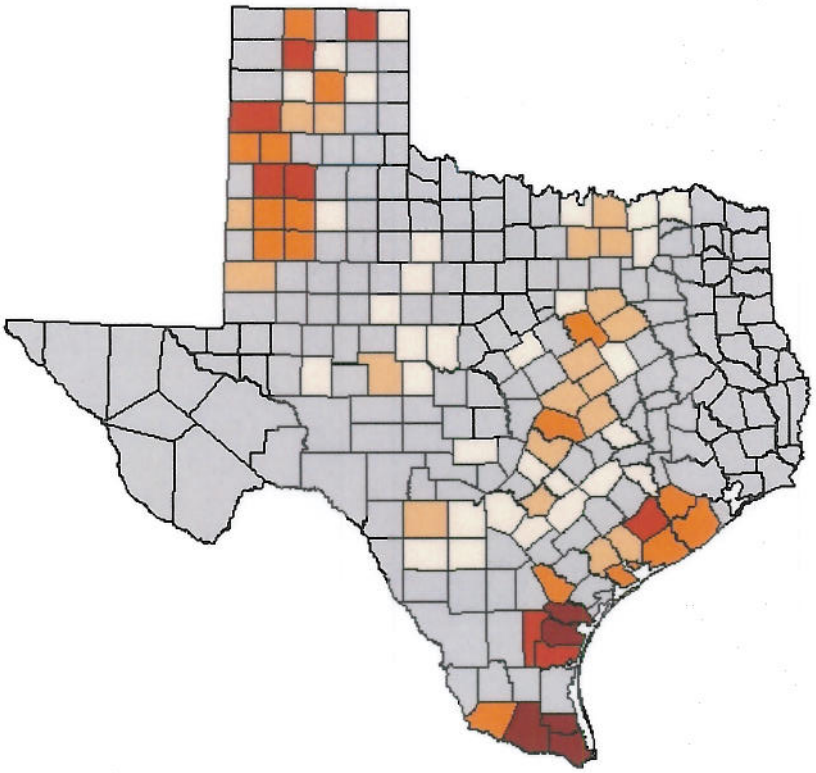
N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
Action Level	A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded.

Dow AgroSciences LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

USDA United States Department of Agriculture
National Agricultural Statistics Service

Texas Field Office of USDA's National Agricultural Statistics Service

Sorghum, Texas, All, 2012



Sorghum

Planted Acres

- 600 - 9,000
- 9,001 - 21,300
- 21,301 - 37,300
- 37,301 - 73,500
- 73,501 - 188,100

Estimate not available for gray color counties.

For information contact Quentin Hart.

View our district map.

Texas All Sorghum County Estimates

District Code	County FIPS Codes	District and County	Acreage Planted (acres)		Acreage Harvested (acres)		Yield per Harvested Acre (bushels)		Production (bushels)	
			2011	2012	2011	2012	2011	2012	2011	2012
11	011	Armstrong	15,700	16,500	2,400	8,200	31.1	31.5	74,700	258,000
	065	Carson	24,700	25,000	4,000	12,600	58.9	32.2	235,600	406,000
	069	Castro	12,200	32,500	1,700	20,600	51.8	56.8	88,000	1,170,000
	117	Deaf Smith	53,000	73,500	13,200	28,500	26.2	48.8	346,000	1,392,000
	153	Floyd	4,300	*	1,700	*	60.6	*	103,000	*
	179	Gray	*	8,800	*	6,300	*	48.1	*	303,000
	189	Hale	*	49,500	*	38,900	*	63.0	*	2,449,000
	233	Hutchinson	*	7,200	*	3,100	*	81.9	*	254,000
	295	Lipscomb	3,400	4,000	600	1,800	38.2	23.9	22,900	43,000
	341	Moore	28,800	41,800	22,100	37,500	53.8	86.4	1,188,000	3,241,000
	357	Ochiltree	*	44,300	*	21,200	*	51.6	*	1,093,000
	369	Parmer	13,300	37,300	4,800	16,300	31.9	49.5	153,000	807,000
	375	Potter	*	3,000	*	900	*	37.8	*	34,000
	381	Randall	*	15,700	*	7,500	*	18.9	*	142,000
	421	Sherman	18,600	25,500	10,400	22,800	74.0	75.6	770,000	1,723,000
	998	Other Counties	171,500	136,400	58,500	90,500	43.3	50.4	2,533,800	4,563,000
		District 1-N	345,500	521,000	119,400	316,700	46.2	56.5	5,515,000	17,878,000
12	079	Cochran	*	20,000	*	16,700	*	24.1	*	403,000
	107	Crosby	3,700	7,900	2,500	7,000	22.0	27.0	55,000	188,900
	165	Gaines	*	10,400	*	9,900	*	25.4	*	251,000
	219	Hockley	*	33,200	*	31,900	*	33.0	*	1,054,000
	279	Lamb	*	45,300	*	33,900	*	35.1	*	1,190,000
	303	Lubbock	*	33,700	*	30,100	*	27.3	*	822,000
	305	Lynn	*	22,500	*	21,300	*	36.8	*	784,000
	445	Terry	*	24,200	*	23,100	*	24.4	*	563,000
	998	Other Counties	66,000	63,800	38,700	50,100	24.1	24.1	933,000	1,205,100
		District 1-S	69,700	261,000	41,200	224,000	24.0	28.8	988,000	6,461,000
21	998	Other Counties	*	8,700	*	4,000	*	47.5	*	190,000

District Code	County FIPS Codes	District and County	Acreage Planted (acres)		Acreage Harvested (acres)		Yield per Harvested Acre (bushels)		Production (bushels)	
			2011	2012	2011	2012	2011	2012	2011	2012
		District 2-N	*	8,700	*	4,000	*	47.5	*	190,000
22	083	Coleman	*	4,300	*	3,700	*	29.2	*	108,000
	207	Haskell	*	4,800	*	900	*	38.6	*	34,700
	253	Jones	*	3,400	*	2,150	*	46.0	*	98,800
	353	Nolan	*	1,600	*	1,350	*	27.4	*	37,000
	399	Runnels	*	6,400	*	5,500	*	32.6	*	179,500
	998	Other Counties	*	5,600	*	1,800	*	27.2	*	49,000
		District 2-S	*	26,100	*	15,400	*	32.9	*	507,000
40	027	Bell	17,000	20,900	15,500	20,600	42.9	80.0	665,000	1,647,000
	035	Bosque	800	*	400	*	22.3	*	8,900	*
	085	Collin	8,400	15,400	8,200	15,300	48.7	43.6	399,000	667,000
	097	Cooke	8,100	6,700	5,300	6,300	39.6	57.9	210,000	365,000
	099	Coryell	4,500	*	3,000	*	13.3	*	40,000	*
	121	Denton	9,000	11,300	4,300	10,300	17.2	42.0	74,000	433,000
	139	Ellis	15,500	21,300	14,100	21,200	47.5	84.6	670,000	1,794,000
	145	Falls	*	14,100	*	13,900	*	72.8	*	1,012,000
	147	Fannin	6,000	6,000	4,800	5,300	52.7	89.6	253,000	475,000
	181	Grayson	9,300	10,300	8,600	10,100	50.5	75.2	434,000	760,000
	193	Hamilton	2,500	2,400	1,700	1,700	48.2	50.0	82,000	85,000
	217	Hill	32,000	28,800	31,300	28,700	55.6	85.3	1,739,000	2,447,000
	231	Hunt	5,800	9,000	5,400	8,800	9.4	71.0	50,500	625,000
	251	Johnson	8,600	7,300	7,900	6,200	50.4	60.6	398,000	376,000
	277	Lamar	*	9,000	*	8,800	*	72.6	*	639,000
	293	Limestone	3,900	5,000	3,400	5,000	37.1	100.0	126,000	500,000
	309	McLennan	14,700	14,000	13,600	13,600	44.4	73.4	603,600	998,000
	331	Milam	12,700	17,100	11,300	17,000	31.9	85.8	360,000	1,458,000
	349	Navarro	10,500	14,300	10,000	14,200	52.9	73.6	529,000	1,045,000
	491	Williamson	*	25,500	*	24,000	*	73.8	*	1,772,000
	998	Other Counties	42,000	15,800	34,900	14,200	36.3	64.1	1,268,000	910,000
		District 4	211,300	254,200	183,700	245,200	43.1	73.4	7,910,000	18,008,000
51	998	Other Counties	*	16,900	*	10,300	*	59.2	*	610,000

District Code	County FIPS Codes	District and County	Acreage Planted (acres)		Acreage Harvested (acres)		Yield per Harvested Acre (bushels)		Production (bushels)	
			2011	2012	2011	2012	2011	2012	2011	2012
		District 5-N	*	16,900	*	10,300	*	59.2	*	610,000
52	998	Other Counties	*	13,200	*	12,400	*	72.7	*	901,000
		District 5-S	*	13,200	*	12,400	*	72.7	*	901,000
70	095	Concho	*	7,700	*	7,500	*	34.0	*	255,000
	171	Gillespie	*	1,300	*	1,100	*	45.5	*	50,000
	383	Reagan	*	600	*	400	*	57.5	*	23,000
	451	Tom Green	*	20,800	*	19,700	*	35.5	*	699,000
	463	Uvalde	10,500	11,500	3,300	9,900	79.9	48.7	263,700	482,000
	998	Other Counties	8,000	4,100	2,200	3,200	32.9	39.7	72,300	127,000
		District 7	18,500	46,000	5,500	41,800	61.1	39.1	336,000	1,636,000
81	015	Austin	2,100	2,900	1,800	2,200	50.8	62.3	91,500	137,000
	025	Bee	13,500	28,600	12,700	20,300	49.2	51.8	625,400	1,051,000
	029	Bexar	4,600	4,700	1,700	3,900	17.1	38.5	29,100	150,000
	051	Burleson	3,500	4,900	2,000	4,900	19.0	74.3	38,000	364,000
	055	Caldwell	4,700	6,900	4,400	6,700	40.0	80.4	176,000	539,000
	149	Fayette	*	600	*	600	*	50.8	*	30,500
	177	Gonzales	*	1,700	*	1,500	*	96.0	*	144,000
	187	Guadalupe	14,500	15,500	12,400	15,200	23.8	68.4	295,000	1,040,000
	209	Hays	*	1,100	*	1,000	*	87.5	*	87,500
	325	Medina	8,300	7,700	2,200	7,200	48.2	50.3	106,000	362,000
	453	Travis	*	12,100	*	12,000	*	68.4	*	821,000
	493	Wilson	7,200	5,800	4,800	5,300	54.8	66.0	263,000	350,000
	998	Other Counties	23,200	8,600	21,100	7,400	34.4	52.6	726,000	389,000
		District 8-N	81,600	101,100	63,100	88,200	37.2	62.0	2,350,000	5,465,000
82	273	Kleberg	42,800	49,000	41,200	35,100	54.6	36.3	2,250,000	1,275,000
	355	Nueces	143,100	188,100	141,100	140,100	58.2	33.7	8,215,000	4,727,000
	409	San Patricio	87,100	123,500	86,700	110,500	60.6	61.9	5,254,000	6,845,000
	998	Other Counties	29,200	43,800	28,600	41,100	66.2	63.0	1,892,000	2,589,000
		District 8-S	302,200	404,400	297,600	326,800	59.2	47.2	17,611,000	15,436,000
90	039	Brazoria	16,800	22,500	15,300	22,500	57.1	102.9	874,000	2,315,000
	057	Calhoun	9,400	22,900	8,500	22,600	66.4	96.9	564,800	2,191,000

District Code	County FIPS Codes	District and County	Acreage Planted (acres)		Acreage Harvested (acres)		Yield per Harvested Acre (bushels)		Production (bushels)	
			2011	2012	2011	2012	2011	2012	2011	2012
	157	Fort Bend	19,800	27,500	17,700	27,500	38.9	103.3	688,900	2,842,000
	239	Jackson	9,100	13,800	7,000	12,900	70.3	71.2	492,000	919,000
	321	Matagorda	26,700	32,000	25,900	30,800	63.5	89.3	1,644,000	2,750,000
	469	Victoria	10,900	19,600	10,000	19,400	74.0	81.3	740,000	1,577,000
	481	Wharton	26,600	44,600	23,100	44,200	52.7	100.3	1,218,300	4,434,800
	998	Other Counties	9,900	9,500	6,400	9,200	33.0	76.1	211,000	700,200
		District 9	129,200	192,400	113,900	189,100	56.5	93.8	6,433,000	17,729,000
96	163	Frio	*	4,300	*	4,200	*	58.3	*	245,000
	249	Jim Wells	38,700	46,700	37,000	42,400	30.6	28.1	1,134,000	1,190,000
	297	Live Oak	1,300	*	1,200	*	52.1	*	62,500	*
	507	Zavala	*	6,900	*	4,500	*	47.8	*	215,000
	998	Other Counties	17,500	12,500	8,500	8,700	53.1	42.1	451,500	366,000
		District 10-N	57,500	70,400	46,700	59,800	35.3	33.7	1,648,000	2,016,000
97	061	Cameron	86,000	102,000	76,000	99,500	58.3	76.1	4,433,000	7,569,000
	215	Hidalgo	90,000	123,500	78,500	117,800	44.9	61.5	3,523,000	7,242,000
	427	Starr	21,600	25,300	16,500	23,000	22.1	50.9	364,000	1,171,000
	489	Willacy	97,300	124,500	96,000	122,600	50.6	74.8	4,862,000	9,176,000
		District 10-S	294,900	375,300	267,000	362,900	49.4	69.3	13,182,000	25,158,000
98	999	Other Districts	39,600	9,300	11,900	3,400	31.7	30.9	377,000	105,000
		Texas	1,550,000	2,300,000	1,150,000	1,900,000	49.0	59.0	56,350,000	112,100,000

* Data suppressed due to confidentiality.

Melanaphis sp.: A New Invasive Aphid Pest of Sorghum

R.T. Villanueva[1], M. Brewer[2], M. Way[2], S. Biles[1], D. Sekula[1], J. Swart[1], C. Crumley[1], A. Knutson[1], R. Parker[1], G. Odvody[2], C. Allen[1], D. Ragsdale[3], W. Rooney[3], G. Peterson[2], David Kerns[4], Tom Royer[5], and S. Armstrong[6],

[1]Texas A&M AgriLife Extension, Weslaco, Commerce, Dallas, Wharton, and Corpus Christi, San Angelo; [2]Texas A&M AgriLife Research, Corpus Christi and Beaumont, Lubbock; [3]Texas A&M University, College Station, TX; [4]Louisiana State University, Winnsboro, LA; [5]Oklahoma State University, Stillwater, TX, [6]USDA ARS, Stillwater, OK.

An aphid outbreak was detected in grain sorghum fields near Beaumont by Dr. Mo Way, and then was soon detected along the Gulf Coast and the Lower Rio Grande Valley in Texas, as well as areas in Louisiana, Mississippi and Oklahoma from June to October 2013. Aphid infestations were observed first in the lower leaves where they progressively advanced to upper leaves, and in some situations the aphids may even colonize the grain sorghum head if they are not controlled.

Identification: These aphids are buff to yellow in color, although color variations are expected. They have dark cornicles (a pair of tubular protrusions near the tail end of the aphid, called 'stove pipes'), and the distal parts of the legs are also dark. Specimens sent to Dr. David Voegtlin (University of Illinois) identified the aphids as the sugarcane aphid, *Melanaphis sacchari*, or a closely related species. This aphid greatly prefers sorghum. It has been found in sorghum in great numbers, while not being detected in neighboring sugarcane. *Melanaphis sacchari* was first detected in Florida in 1977 and in Louisiana in 2001, but the invasion in sorghum in our region may represent a new introduction or biotype. This new invasive species needs further analysis for a definitive identification.

Figure 1. *Melanaphis* sp. outbreak in sorghum in summer 2013 (top left Beaumont, fall population on Johnson grass (bottom left Corpus Christi) Note the presence of a few winged aphids and many unwinged aphids. Severe whole plant damage top right, Beaumont and sooty mold/honeydew damage (bottom right Corpus Christi).

Behavior: In the field *Melanaphis* sp. colonizes the lower surface of sorghum leaves. Repeated field inspections had shown that *Melanaphis* sp. is primarily found on grain sorghum, with some observation on Sudan grass (Haygrazer), Johnson grass, and corn. In contrast, feeding damages on sugarcane has not been observed. Preliminary observations have shown that if this pest is uncontrolled, seeds are dehydrated and not filled, and yields can be reduced.

Figure 2. *Melanaphis* sp. damages of sorghum plants and colonizing the heads in an experimental field in Weslaco November 2013.

Damage and Distribution: Direct damage of this aphid causes a brownish-reddish, and yellow coloration on the feeding area, this damage can be observed on both sides of the leaves. The indirect damage is caused by abundant honeydew produced, turning the leaves sticky and shiny from honeydew. These leaves later become coated with sooty mold fungus which may hamper harvesting operations clogging combines and making harvest work and machine maintenance very difficult. Although no yield data from replicated trials has been obtained, Dr. Way reported one grower experiencing a 50% yield loss comparing 2 adjacent fields - one treated, the other not; and Dr. Villanueva and D. Sekula reported absence of grains filled on a seed increase field in Weslaco. Currently, these aphids are dispersed in the lower Rio Grande Valley, the Gulf Coast, central Texas Blacklands, and northern counties bordering the Red River, as well as in southern Oklahoma along the Red

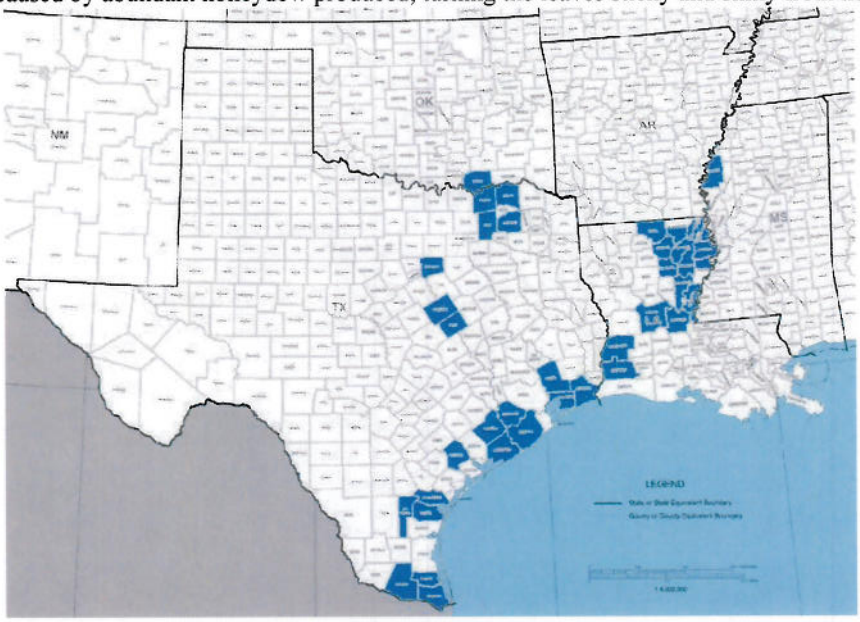


Figure 3. The sorghum aphid *Melanaphis* sp. was detected in 38 counties and parishes of Texas, Louisiana, Oklahoma, and Mississippi in 2013. All sorghum growing counties in this geographical range may be at risk. Further range expansion into western Texas, Arkansas, and the Mississippi Delta is a possibility depending on the weather and host plants. This aphid spreads rapidly across a wide geographic range.

River and from southwest to northeast Louisiana. Fall populations on remnant sorghum of harvested fields and Johnson grass have been detected in many of these counties, positioning the aphid for possible outbreaks next year. (Fig. 3). Dr. Villanueva received reports of sorghum fields infested with *Melanaphis* sp. in Tamaulipas, Mexico where this aphid is causing great damages to commercial sorghum hybrids in the fall of 2013.

Management and Control: So far, it appears that there might be some promising sorghum varieties, where leaves clearly show low levels of damage (picture above). Also, Dr. Scott Armstrong (USDA-Stillwater OK) has been evaluating sorghum cultivars, he found from 2 different assays that the cultivar TX-2783 does provide seedling resistance. Many sorghum lines are being evaluated for resistance by Drs. Gary Peterson and Dr. Bill Rooney, Texas AgriLfe Research. In the field, aphid natural enemies have been detected, including predatory beetles (lady bugs), predatory flies (hover flies), green lacewings, and parasites (aphelinid parasitoids), but high populations of aphids were seen at the same time.

A replicated insecticide test was conducted in China, TX on August 30, 2013 by Dr. Way using Dimethoate® 4EC at 1pt/A, Lorsban Advanced atl qt/A, Karate Z at 2fl oz/A, and Transform WG at 0.75 oz/A and compared with an untreated control. The spray was conducted when the sorghum was in the dough stage. A second replicated insecticide test was conducted on October 29, 2013 in a sorghum field in Weslaco Center by Dr. Villanueva and D. Sekula. The trial was replicated 4 times using Dimethoate® 4EC at 1 pt/A, Admire Pro® at 8 oz/A, Lorsban Advance® at 1qt/A, Transform® at 0.75 oz/A, Asana® at 10 oz/A, and an untreated control. In the first test the field previously had been treated with Lorsban 4E 2 or 3 times, but aphid populations were still high at time of plot set-up. In the second test the sorghum was a seed increase field and treated previously with 2 applications each of Warhawk® (2 pts/A), Prevathon® (2 pts/A) and Di-Syston® 8 (1.5 pts/A). In both studies, data showed that Transform WG at 0.75 oz/A provided good control on *Melanaphis* sp. 4-daa and 7-daa (Fig. 3 a and 3b); and Admire Pro was effective in the Weslaco test. Data also suggest Karate Z "flared" populations of aphids in the first test. By the 2nd sample date, aphid populations had declined in untreated plots; thus, no meaningful conclusions can be dawn relative to the later sampling.

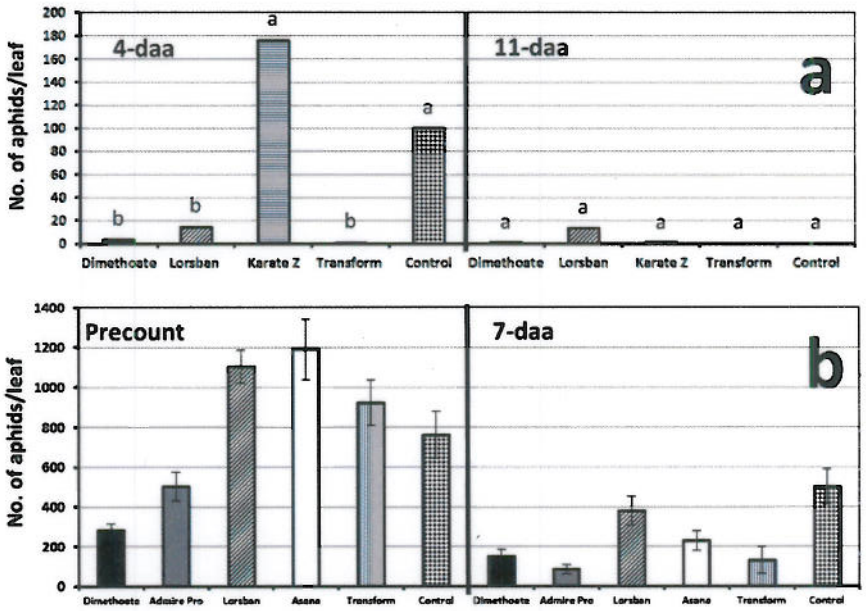


Figure 4. Responses of *Melanaphis* sp. to insecticide sprays in (a) China (30 August 2013), and (b) Weslaco TX (28 October 2013).

Figure 5. *Melanaphis* sp. and a predacious syrphid larva on a sorghum leaf (December 2013).

Conrath, Andrea B

From: Mallampalli, Nikhil
Sent: Tuesday, January 21, 2014 1:25 PM
To: Conrath, Andrea B
Cc: Cook, Colwell; Chism, William; Brassard, David; Jones, Arnet; Hill, Elizabeth
Subject: a bit more for RD on that Louisiana section 18 for fipronil use against crazy ants

Hi Andrea -

so I am researching more on this ant, and it seems like our previous authorization for Texas to use fipronil against this invasive ant not helped to contain the ant within TX. This species appears to have established itself as far away as Georgia - see, for example, this news article:

http://onlineathens.com/uga/2013-09-22/tawny-crazy-ants-are-here-and-may-be-worse-fire-ants

I think there is very likely a need to control the ant in Louisiana with something - and fipronil appears to be a good candidate in terms of efficacy (For instance, Dave Brassard unearthed research on Argentine ants that showed fipronil to be better than several other options, in part because it is slow-acting).

However, the widespread distribution of this ant makes me wonder - does this request qualify for a "quarantine" exemption? Colwell Cook's review of the Texas exemption request described a quarantine as being for "controlling the spread of any pest that is an invasive species or is otherwise new to or not theretofore known to be widely prevalent or distributed within... the United States..."

So it seems to me that this ant meets only the "invasive species" part of that statement. Does this mean that they should re-submit under another exemption provision (crisis or emergency)? Should BEAD mention this aspect in its memo?
Does this lack of meeting all parts of the quarantine definition mean we should deny the request?

I haven't handled many quarantine exemption reviews and those that I have done have been more "clear" than this situation. So I am copying a few other BEAD folks who may also want to contribute to this discussion.

I appreciate any comments you can send, and I hope everyone is enjoying this snowy day!

-- Nikhil

Nikhil Mallampalli

USEPA/OCSPP/OPP/BEAD
(703) 308-1924

mallampalli.nikhil@epa.gov

TEXAS DEPARTMENT OF AGRICULTURE

TODD STAPLES
COMMISSIONER

January 17, 2014

Mr. Al Cherepon
Water Planning & Assessment
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Mr. Cherepon:

This is to advise your agency that the Texas Department of Agriculture (TDA) has submitted an application to the U. S. Environmental Protection Agency (EPA) for an emergency specific exemption to authorize the use of sulfoxaflor (Transform® WG Insecticide EPA Reg. No. 62719-625) to control the newly introduced sugarcane aphid, *Melanaphis sp.* (thought to be *Melanaphis sacchari)* in sorghum. This action is pursuant to the authority of FIFRA Section 18. A copy of the proposed Section 18 Use Directions is included for your reference.

Section 166.20(a)(8) of Title 40, Code of Federal Registration requires that your agency be notified of this action. Any comments your agency may have relative to the application noted above should be sent to my attention

If you have any questions, please contact me at (512) 936-2535

Sincerely yours,

Dale R. Scott
Coordinator for Pesticide Product Evaluation and Registration
Dale.Scott@TexasAgriculture.gov

DS/ds

Enclosure:
Proposed Section 18 Use Directions

P.O. Box 12847 Austin, Texas 78711 (512) 463-7476 Fax: (888) 223-8861
www.TexasAgriculture.gov

TEXAS DEPARTMENT OF AGRICULTURE

TODD STAPLES
COMMISSIONER

January 17, 2014

Ms. Kathy Boydston
Wildlife Division - Habitat Assessment
Texas Parks & Wildlife Department
4200 Smith School Road
Austin, TX 78744

Ms. Boydston:

This is to advise your agency that the Texas Department of Agriculture (TDA) has submitted an application to the U. S. Environmental Protection Agency (EPA) for an emergency specific exemption to authorize the use of sulfoxaflor (Transform® WG Insecticide EPA Reg. No. 62719-625) to control the newly introduced sugarcane aphid, *Melanaphis sp.* (thought to be *Melanaphis sacchari)* in sorghum. This action is pursuant to the authority of FIFRA Section 18. A copy of the proposed Section 18 Use Directions is included for your reference.

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If you have any questions, please contact me at (512) 936-2535

Sincerely yours,

Dale R. Scott
Coordinator for Pesticide Product Evaluation and Registration
Dale.Scott@TexasAgriculture.gov

DS/ds

Enclosure:
Proposed Section 18 Use Directions

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www.TexasAgriculture.gov

TEXAS DEPARTMENT OF AGRICULTURE

TODD STAPLES
COMMISSIONER

January 17, 2014

Dr. Jong Song Lee
MC 168, Toxicology
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Dr. Lee:

This is to advise your agency that the Texas Department of Agriculture (TDA) has submitted an application to the U. S. Environmental Protection Agency (EPA) for an emergency specific exemption to authorize the use of sulfoxaflor (Transform® WG Insecticide EPA Reg. No. 62719-625) to control the newly introduced sugarcane aphid, *Melanaphis sp.* (thought to be *Melanaphis sacchari)* in sorghum. This action is pursuant to the authority of FIFRA Section 18. A copy of the proposed Section 18 Use Directions is included for your reference.

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If you have any questions, please contact me at (512) 936-2535

Sincerely yours,

Dale R. Scott
Coordinator for Pesticide Product Evaluation and Registration
Dale.Scott@TexasAgriculture.gov

DS/ds

Enclosure:
Proposed Section 18 Use Directions

P.O. Box 12847 Austin, Texas 78711 (512) 463-7476 Fax: (888) 223-8861
www.TexasAgriculture.gov

TEXAS DEPARTMENT OF AGRICULTURE

TODD STAPLES
COMMISSIONER

January 17, 2014

Mr. Adam Zerrenner
Assistant Field Supervisor
U.S. Fish and Wildlife Service
Hartland Bank Building
10711 Burnet Road, Ste.200
Austin, Texas 78758

Mr. Zerrenner:

This is to advise your agency that the Texas Department of Agriculture (TDA) has submitted an application to the U. S. Environmental Protection Agency (EPA) for an emergency specific exemption to authorize the use of sulfoxaflor (Transform® WG Insecticide EPA Reg. No. 62719-625) to control the newly introduced sugarcane aphid, *Melanaphis sp.* (thought to be *Melanaphis sacchari)* in sorghum. This action is pursuant to the authority of FIFRA Section 18. A copy of the proposed Section 18 Use Directions is included for your reference.

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If you have any questions, please contact me at (512) 936-2535

Sincerely yours,

Dale R. Scott
Coordinator for Pesticide Product Evaluation and Registration
Dale.Scott@TexasAgriculture.gov

DS/ds

Enclosure:
Proposed Section 18 Use Directions

P.O. Box 12847 Austin, Texas 78711 (512) 463-7476 Fax: (888) 223-8861
www.TexasAgriculture.gov

Texas Grain Sorghum Producers * PO Box 905 * Bellville, TX 77871

Texas Grain Sorghum Association

Texas Grain Sorghum Board

Dale Scott
Texas Department of Agriculture
PO Box 12847
Austin, TX 78711

Dear Dale:

After numerous conversations with producers of grain sorghum from across the state as well as entomologist and crop production specialist we find it necessary to ask for a Section 18 on Transform WG produced by Dow. This product very effectively protects grain sorghum from a invasive pest know as the Melanaphis Sacchari which effects sorghum of all varieties and age quantifications.

For the current crop year there will be approximately three million acres of grain sorghum planted across the state. Planting generally starts in early March in the Rio Grande Valley and continues into late June on the High Plains. In addition, a secondary crop of grain sorghum, often refereed to as "fall" grain is planted in the Rio Grande Valley in late August. This crop generally follows a failed crop of cotton or corn. We have producers that have reported up to a 50% loss on plant population on regular grain and in some instances, the pest has completely destroyed an entire crop to render it not worth harvesting. At our current state of knowledge, the infestation zone is spread across an approximate two million acres of grain sorghum production, and a very preliminary field infestation percentage in the core zone of infestation along the Gulf Coast is about 10% for a perennial moderate pest problem. Using a low and high range of yield loss of 10% and 50% during this initial invasion phase, a grain market value of $8 per 100lb weight and yield potential in dryland production of 3,000 lb/acre, the potential monetary loss is between $24 and $120/acre, and the annual regional multi-state loss is between $4.8 million and $24 million of the potential 200,000 impacted acres. If the invasion phase develops into an annual severe pest situation, impacted fields may easily triple without management interventions, resulting in potential annual regional multi-state loss of between $14.4 million and $72 million. There is currently no chemical or cultural practice that has any measurable degree of efficacy to combat this economic problem. Transform is generally used at a rate with an efficiency that has no known rival.

I would ask that the Section 18 cover the entire state due to the wide range of damage that was done in the 2013 crop year. Due to the length of the planting period we would also ask that the product be labeled for the remainder of the year as an ensuing Section 3 will likely be filed for subsequent crop years.

Please call if you have any questions or comments.

Best Regards,

Wayne Cleveland
Executive Director
Texas Grain Sorghum Producers
(254) 541-5375

Dow AgroSciences

Dow AgroSciences
9330 Zionsville Road Indianapolis, IN 46268 USA

www.dowagro.com

January 14, 2014

Dale R. Scott
Coordinator for Pesticide Product Evaluation and Registration
Texas Department of Agriculture
P. O. Box 12847
Austin, TX 78711

Re: Support letter for Transform™ WG Section 18 on sorghum

Dear Mr. Scott,

Per your request, this letter is to confirm that Dow AgroSciences supports the pursuit of a Section 18 emergency exemption for Transform WG to control sugarcane aphid in sorghum in the state of Texas. Transform WG was registered by the US Environmental Protection Agency to control aphids and other pests on a number of crops in 2013. A tolerance petition was recently submitted to EPA in pursuit of a Section 3 registration in sorghum but that registration is not expected prior to the 2015 use season.

Transform WG provides excellent efficacy against aphids and the active ingredient, sulfoxaflor, represents a new class of chemistry with a novel mode of action. As such it controls pests resistant to other classes of chemistry, among other benefits.

If you have questions, please do not hesitate to call me.

Sincerely,

Jamey Thomas, Ph.D.
US Regulatory Manager
Dow AgroSciences

cc: Tami Jones-Jefferson, DAS
cc: Ray Brinkmeyer, DAS

™Trademark of Dow AgroSciences LLC

OFFICE OF M. O. (Mo) Way, Professor of Entomology

AgriLIFE RESEARCH
Texas A&M System

Dale Scott
Coordinator for Pesticide Product Evaluation and Registration
Texas Department of Agriculture
1700 N. Congress Ave.
Austin, TX 78711

Dear Dale, January 7, 2013

I want to inform you about a very serious sugarcane aphid (*Melanaphis sacchari*) problem in Texas grain sorghum in 2013. I observed it first-hand along the Texas Gulf Coast. My colleagues informed me this aphid was problematic in other areas of Texas as well, including the Rio Grande Valley and around Corpus Christi (documented by Drs. Raul Villanueva and Michael Brewer, respectively). This aphid is generally not a problem on sorghum in Texas, but not so in 2013. I'm not sure what caused the outbreak---maybe a cool, rather wet spring, but I observed fields in Jefferson, Chambers and Liberty Counties heavily infested late in the maturation of the sorghum---post-heading. I have no yield loss data, but I know the farmer in Chambers County did not harvest his sorghum because of this pest. Another farmer in Liberty County did not spray a field adjacent to a sprayed field---he estimated the loss in yield at about 50%. In addition, the heavy amount of honeydew interfered with harvesting operations.

My project conducted an efficacy trial in a grain sorghum field in Jefferson County. We looked at Lorsban Advanced, Dimethoate 4EC, Karate Z and Transform WG. Lorsban Advanced and Dimethoate 4EC have a long preharvest interval (28-30 days) while Karate Z actually "flared" aphid populations. Transform WG gave excellent control, but is not labeled on sorghum in the US. Dr. Raul Villanueva also obtained similar results in a trial near Weslaco. Furthermore, the makers of Transform WG, Dow AgroSciences, project a Section 3 for Transform WG in 2015. My colleague, Dr. David Kerns with the LSU AgCenter, also observed severe sugarcane aphid damage on grain sorghum in Louisiana. We are all very interested in pursuing Section 18s in Texas and Louisiana for Transform WG for 2014. We do not know if this aphid will be a problem in 2014, but we want to be proactive. We know our stakeholders strongly support our intentions. Also, Dow AgroSciences supports our efforts.

I strongly support a Section 18 request for Transform WG for all of Texas in 2014. I know Dr. David Kerns with the LSU AgCenter also is supporting a Section 18 request for Louisiana. I am now in the process of obtaining letters of support from grain sorghum farmers on the Upper Gulf Coast of Texas.

Please let me know if you need more information from me. I estimate grain sorghum planting in my area will begin in February, depending on the weather, which is coming up soon.

Sincerely,

M.O. Way

Texas AgriLife Research and Extension Center at Beaumont
1509 Aggie Drive
Beaumont, Texas 77713
Tel. 409-752-2741, Extension 2231
Cell. 409-658-2186
Fax. 409-752-5560
Email. moway@aesrg.tamu.edu
WWW – http://beaumont.tamu.edu

OFFICE OF M. O. (Mo) Way, Professor of Entomology

AgriLIFE RESEARCH
Texas A&M System

Dale Scott, Pesticide Registration Specialist
TDA
P. O. Box 12847
Austin, TX 78711

October 16, 2013

Dear Dale,

I want to inform you about a very serious sugarcane aphid (*Melanaphis sacchari*) problem in Texas grain sorghum this year. You may have already heard of this problem, but I observed it first-hand along the Texas Gulf Coast. This aphid is generally not a problem on sorghum in Texas, but not so in 2013. I'm not sure what caused the outbreak---maybe a cool, rather wet spring, but I observed fields in Jefferson, Chambers and Liberty Counties heavily infested late in the maturation of the sorghum---post-heading. I have no yield loss data, but I know the farmer in Chambers County did not harvest his sorghum because of this pest. Another farmer in Liberty County did not spray a field adjacent to a sprayed field---he estimated the loss in yield at about 50%. In addition, the heavy amount of honeydew interfered with harvesting operations.

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What do you think? What do you need from me and Texas grain sorghum producers to proceed? Beginning of the use season in Texas in 2014 would be no later than June 1---but, the earlier the better.

Sincerely,

M.O. Way

Dr. M. O. Way
Professor of Entomology
Texas A&M University

Texas AgriLife Research and Extension Center at Beaumont
1509 Aggie Drive
Beaumont, Texas 77713
Tel. 409-752-2741, Extension 2231
Cell. 409-658-2186
Fax. 409-752-5560
Email. moway@aesrg.tamu.edu
WWW – http://beaumont.tamu.edu

District 7 Headquarters/Department of Entomology/IPM

TEXAS A&M AGRILIFE EXTENSION

January 6, 2014

Dale R. Scott
Coordinator for Pesticide Product Evaluation and Registration
Texas Department of Agriculture
P.O. Box 12847
Austin, TX 78711

Dear Mr. Scott,

I am writing to support the US EPA Section 18 labeling effort for sulfoxaflor, Transform®, insecticide on sorghum (forage and grain) for control of the newly introduced sugarcane aphid, *Melanaphis sp.*(thought to be *Melanaphis sacchari*). This aphid appeared late in the fall of 2013 near Beaumont, TX. Later in the year it was similarly discovered in Northeastern Mexico and the Lower Rio Grande Valley, in the Coastal Bend region, in the Texas Blacklands region, in the Red River Valley and into Oklahoma. To the east, it was found in numerous locations in Louisiana, and one county in Mississippi. This aphid produces large colonies on sorghum leaves. The aphid feeding causes leaf damage and the aphids produce sticky honey dew which they excrete onto the plant leaves. This makes the leaves very sticky. Early season feeding may kill sorghum seedlings. Continued aphid feeding can cause heads not to form. At harvest, the sticky leaves, stalks and heads may choke combines requiring service stops; or foul the grain separation process with combines, causing grain to "ride over" and be lost on the ground. Reports of up to 50% grain losses were reported from the late season infestations in 2013.

Natural enemies have been observed feeding on the sugarcane aphid, but they apparently had difficulty responding quickly enough to prevent damage in 2013. Progress is being made on developing resistant/tolerant sorghum lines, but sufficient quantities of agronomically acceptable cultivars will not be available for the 2014 planting season.

Field inspections of sorghum plants this winter have, so far, shown sugarcane aphid populations are surviving in the Lower Rio Grande Valley on volunteer grain sorghum and Johnsongrass. If they survive the winter, effective insecticides will be needed to protect the 2014 grain sorghum crop.

Insecticide testing and field use in 2013 indicated that pyrethroids (lambda cyhalothrin (Karate®) and esfenvalerate (Asana®) provided some initial population reduction when used at labeled rates. However, rapid population increases were seen following treatment in some instances. The organophosphate, chlorpyrifos (Lorsban®, Chlorpyrifos®, Nufos®, etc.) also provided less than satisfactory control, even when used at rates of up to 1 qt/ac. Among labeled alternatives, only the organophosphate, dimethoate, (Dimethoate®, Dimate®, etc.) provided acceptable control in both field use and insecticide field tests used at 1 pt/ac. Field trails also included the newly available but unlabeled insecticide, sulfoxaflor (Transform®). Sulfoxaflor is the only labeled insecticide in the sulfoximine class of insecticide chemistry. Transform® used at 0.75 oz/ac provided good control of sugarcane aphids in small plot field trials during the fall of 2013.

I believe insecticides will be needed to control sugarcane aphids in sorghum in 2014. Given the tendency for aphids to develop resistance to insecticides, the availability of only one effective active ingredient for sugarcane aphid control on sorghum is likely to result, relatively quickly, in populations of the aphid that are not effectively controlled by dimethoate. I therefore recommend that the Section 18 Label for Transform® be pursued and granted to help Texas sorghum producers protect their crops from sugarcane aphid in 2014.

Sincerely,

Charles T. Allen

Charles T. Allen
Professor, Extension Entomologist, Statewide IPM Coordinator, and Associate Department Head - Extension Entomology
Texas A&M AgriLife Extension Service

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December 30, 2013

Dale R. Scott
Coordinator for Pesticide Product Evaluation and Registration
Texas Department of Agriculture
P.O. Box 12847
Austin, TX 78711

Dear Mr. Dale Scott:

National Sorghum Producers supports the Section 18 permit for *Transform* to avoid agronomic and economic implications for sorghum farmers in the southern and eastern regions of the Sorghum Belt. The aphid identified as Melanaphis Sacchari has become an invasive pest, effecting thousands of U.S. sorghum acres. NSP feels decisive action is needed given that no chemical or cultural practice has demonstrated significant efficacy and asks that a Section 18 permit for the use of *Transform* as a pesticide to control infestations during the 2014 growing season be approved as soon as possible.

The urgency NSP places on this request is vital to the success of our crop and the acres expected to be planted during the 2014 growing season. In fact, nearly 25 percent of the U.S. sorghum crop will begin to be planted as early as Feb. 1, 2014. Without a resource to control this new pest plaguing the southern and eastern regions of the Sorghum Belt, nearly 100 million bushels of sorghum with a potential market value of $400 million could be affected.

While the aphid has been identified in many key sorghum producing states, implications are particularly significant for the southern and Coastal Bend regions of Texas, which remains to be one of the top producing regions for the entire sorghum industry. It is important a method of control for this invasive pest be implemented quickly to avoid devastating impacts to sorghum farmers, rural economies and the entire U.S. sorghum industry.

NSP has worked diligently with the United Sorghum Checkoff Program, farmers, entomologists and other involved parties on the best possible approach to provide sorghum farmers with a control method to manage this new pest. Therefore, NSP strongly supports timely approval of the Section 18 permit for *Transform.* NSP appreciates your attention to this matter and for your support. Please contact us if you have any questions or concerns.

Sincerely,

Tim Lust

Tim Lust, CEO
National Sorghum Producers

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TEXAS A&M AGRILIFE RESEARCH AND EXTENSION CENTER AT CORPUS CHRISTI

TEXAS A&M AGRILIFE RESEARCH

January 10, 2014

Dale Scott, Coordinator for Pesticide Product Evaluation and Registration
Texas Department of Agriculture
1700 N. Congress Ave.
Austin, TX 78711

Dear Mr. Scott,

I wish to add my assessment of the need for a Section 18 for Transform WG. My assessment was just updated yesterday, during conversations with growers at an event, Sorghum U., in Robstown, TX. I will not go into detail of Transform efficacy, which is well documented in a letter from Dr. Way. I will focus on the strategic value of its use in sorghum, given the impact last year and the projection of its impact in Texas and regionally next year. The Sorghum U. meeting was attended by about 50 growers primarily growing sorghum along the Texas Gulf Coast, which is the core infestation area of this problem. Growers from the Texas High Plains, Rolling Hills, and Oklahoma were also in attendance.

The infestation zone in 2013 was spread across about 2 million acres of grain sorghum production, and early 2013 grower reporting indicates about 10% of fields infested. With updates at Sorghum U., specific areas in South Texas saw 25 to 50% or more of fields infested. Yield loss of 20 to 50% has been reported. Therefore, an economic impact annually of $50M may occur in Texas without proper management, with a strong concentration of impact occurring in South Texas. This aphid is successfully overwintering (observations all through the Texas Gulf Coast, increasing the probability that the problem with grow next year and impact may exceed these estimates. The aphid certainly has shown an ability to spread rapidly, putting grain sorghum production at risk in a wide region.

I wish to complement the Texas Grain Sorghum Producers Board and United Sorghum Checkoff for sponsoring conference calls, outreach events (Sorghum U.), and scheduled 2014 research activities. This research will include refined work on economic thresholds, monitoring, biocontrol, and host plant resistance. For now, the excellent early insecticide efficacy work by Drs. Way and Villanueva, the work by many delineating the problem, and the potential for expansion as noted above, justify an early management strategy to include Transform in 2014. This is a critical early response to complement studies scheduled to produce additional management tools in 2015 and beyond.

Therefore, I wish to add my support to a Section 18 request for Transform WG for all of Texas in 2014. Please let me know if you need more information from me.

Sincerely,

Michael Brewer

Michael Brewer
Assistant Professor, Entomology

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UNITED SORGHUM CHECKOFF PROGRAM

Committed to invest sorghum checkoff dollars efficiently to increase profitability for sorghum.

December 30, 2013

Dale R. Scott
Coordinator for Pesticide Product Evaluation and Registration
Texas Department of Agriculture
P.O. Box 12847
Austin, TX 78711

Dear Mr. Dale Scott:

As the national research, promotion, and education board for the U.S. sorghum industry, the United Sorghum Checkoff Program (USCP) is committed to addressing the needs of U.S. sorghum farmers. Pest management remains a major agronomic objective of the USCP and the recent developments regarding a new aphid impacting the southern and eastern Sorghum Belt merits precise and immediate attention.

Given the scope of this new aphid's range, the USCP is strongly supportive of efforts to approve the Section 18 permit for the use of *Transform* as a pesticide to control infestations during the 2014 growing season. The urgency of this permit is crucial as 25 percent of the U.S. sorghum crop will begin to be planted as early as February 1, 2014. If left uncontrolled in the southern and eastern Sorghum Belt, this new pest has the ability to impact nearly 100 million bushels of sorghum with a potential market value of $400 million. Implications are particularly significant for the southern growing regions, including Eastern Louisiana and the coastal bend of Texas which remains one of the most productive sorghum growing geographies in the U.S. Given that the aphid has been identified in multiple key sorghum states, the need for action is crucial and timely. Effectively providing control options to sorghum farmers potentially impacted by this pest is needed to avoid devastating implications to the U.S. sorghum industry.

The USCP is confident in the scientific and strategic approach documented by the agencies involved. The USCP strongly supports the timely approval of the Section 18 permit for *Transform*. This chemical will provide a documented control method for sorghum farmers to manage this new pest. We appreciate your support in this effort as well as the affiliated institutions who have been addressing this critical issue. Please contact me with any questions or concerns.

Sincerely,

Justin Weinheimer, Ph.D.
United Sorghum Checkoff Program
Crop Improvement Program Director

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Stoesser Farms

501 South Church
Dayton, TX 77535

Dale Scott---Texas Department of Agriculture
Coordinator for Pesticide Product Evaluation and Registration
1700 N. Congress Ave.
Austin, TX 78701

January 7, 2014

Dear Dale Scott,

I am a rice, soybean and sorghum farmer in Liberty County. This year, my sons and I farmed about 2,000 acres of grain sorghum. In late June, we observed aphid problems on our headed grain sorghum. We had never before seen such high populations of aphids in our sorghum. There was honeydew and sooty mold fungus everywhere and high populations of aphids on every leaf we looked at. I called Dr. Mo Way to come out and inspect our fields. He identified the aphids as sugarcane aphid which has never been a problem for us in the past.

Before Mo inspected our fields, we sprayed with Karate Z then Stallion which is a combination of a pyrethroid and Lorsban. We still did not get good control. I estimate we lost at least 1,000 lb/acre in yield. If we had not sprayed with Stallion, I'm sure our yield losses would have been even higher.

I know Mo is gathering information and data to support a Section 18 for Transform WG for use in Texas next year. **I strongly support this effort. We need to have a good insecticide available to help us manage this pest if it becomes serious next year.**

Sincerely,

Ray Stoesser

Ray Stoesser
713-851-0151
erstoesser@sbcglobal.net

TEXAS AGRILIFE RESEARCH AND EXTENSION CENTER AT WESLACO

Weslaco, December 30, 2013

Dale Scott
Pesticide Registration Specialist
Texas Department of Agriculture
P. O. Box 12847, Austin, TX 78711

Section 18 or Crisis Exemption for Transform WG for Sugarcane Aphid in Sorghum

Dear Dale,

During mid-October 2013 an outbreak of aphids was discovered here in the Lower Rio Grande Valley (LRGV). This aphid occurrence was first detected in grain sorghum fields near Beaumont by Dr. Mo Way, and soon detected along the Gulf Coast, as well as areas in Louisiana, Mississippi and Oklahoma from June to October 2013. Currently, the aphid is found in Mexico near the LRGV and up to Ciudad Victoria (5 hrs. from the border). This aphid was identified as the sugarcane aphid, *Melanaphis sacchari*, and it might be a new biotype that switched hosts or a new invasive species recently introduced into the U.S. This aphid has been found in sorghum in great numbers, while not being detected in neighboring sugarcane or corn. Aphid infestations were observed first in the lower leaves and then progressively advanced to upper leaves. The aphids may even colonize the grain sorghum head (panicles) if they are not controlled, where grains were observed completely dehydrated.

Danielle Sekula (IPM agent for LRGV) and I conducted an insecticide test on October 29, 2013 in a sorghum field in the Weslaco Center using Dimethoate® 4EC at 1 pt/A, Admire Pro® at 8 oz/A, Lorsban Advance® at 1qt/A, Transform® at 0.75 oz/A, Asana® at 10 oz/A, and an untreated control. This field was a seed increase plot and it was treated previously with 2 applications each of Warhawk® (2 pts/A), Prevathon® (2 pts/A) and Di-Syston® 8 (1.5 pts/A). Data from this test showed that Transform®, AdmirePro® and Dimethoate® provided good control. Only Dimethoate® is registered for sorghum.

I know firsthand that Dr. Way had similar results with Transform® in an efficacy test conducted in Beaumont. I believe that our stakeholders may require this product in case the aphid outbreak occurs in the 2014 season. Please use this information to pursue a section 18 registration for Transform WG. These aphids are at this time present in the LRGV; they are in voluntary sorghum, sorghum used as windbreak, or energy sorghum in fields.

Furthermore, I want to inform you of reports from a Mexican colleague. He informed me that growers were using up to ten applications of different combinations of insecticides to control this aphid unsuccessfully in Rio Bravo and San Fernando (areas locate fewer than 1-hr drive from the border). The insecticides used included Lorsban, Methomyl or Cypermethrin. He reported that yield were completely lost in entire fields. Additionally, sorghum is planted in these areas of Mexico in December and January and in the LRGV in February. The sugarcane aphid seems to be resisting the

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lower temperatures as some residual populations are present in the field and as it was described above aphid population may be present during the coming growing season.

If you need further information for pursuing a registration of insecticides to control *M. sacchari*, a new pest of sorghum please let me know or contact me by telephone or email.

Sincerely,

Raul T. Villanueva, Ph.D.
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Texas AgriLIFE Extension - Texas A & M University
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Foliar Treatments for Sugarcane Aphid Control in Sorghum

Mo Way, Becky Pearson, Caleb Verret, Suhas Vyavhare, David Voegtlin and Jim Woolley
Leger's Farm
China, TX
2013

PLOT PLAN

⇓ North

IV					III					II					I				
20	*19*	*18*	*17*	*16*	*15*	*14*	*13*	*12*	*11*	*10*	*9*	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*
1	**2**	**3**	**4**	**5**	**3**	**5**	**1**	**2**	**4**	**3**	**4**	**5**	**2**	**1**	**4**	**2**	**1**	**3**	**5**

Plot size = 4 ft x 50 ft; each plot separated by 3 rows
Note: smaller numbers in *italics* are plot numbers
Variety: DeKalb 54-00

TREATMENT DESCRIPTIONS, RATES AND TIMINGS

Treatment no.	Flag color	Description	Rate
1	White	Lorsban Advanced	1 qt/A
2	Blue	Transform WG	0.75 oz prod/A
3	Yellow	Karate Z	2 fl oz/A
4	Orange	Dimethoate 4EC	1 pt/A
5	Pink	Untreated	---

Experimental design: Randomized complete block with 5 treatments and 4 replications

Treatments: Treatments 1 – 4 applied using a hand-held, CO_2 pressurized, 3 nozzle (800067 tips with 50 mesh screens, 29 gpa final spray volume) spray rig on Aug 30

Sampling: Removed 20 leaves per plot along row from top and middle of canopy on Sep 3 and 10; leaves from bottom of canopy were dead or dying and harbored no aphids; counted aphids per leaf on both sample dates

Data analysis: Insect counts transformed using $\sqrt{x+0.5}$; all data analyzed by ANOVA and means separated by LSD

Discussion

Field inspections of grain sorghum fields in Jefferson, Liberty and Chambers Counties in August and September of 2013 revealed alarmingly high populations of an unknown aphid attacking

M.O. Way · moway@aesrg.tamu.edu · (409)752-2741 ext.2231
Texas AgriLife Research and Extension Center at Beaumont · 1509 Aggie Dr. · Beaumont, TX 77713 · http://beaumont.tamu.edu

sorghum foliage. Reasons for this outbreak are unknown, although SE Texas experienced an unusually cool spring in 2013. Aphid specimens were sent to Dr. David Voegtlin, University of Illinois, who identified the aphids as the sugarcane aphid, *Melanaphis sacchari.* Aphids (adults, some with wings, and nymphs) were found in aggregations, primarily on the underside of leaves. Affected foliage was frequently coated with sooty mold fungus growing on the copious honeydew excreted by the aphids. Initially, very few parasites and predators were observed attacking the aphids, but later in the season, syrphid flies, ladybird beetles (both adults and larvae), lacewings etc. were noted. Some aphids were parasitized (black mummies). Parasitized aphids were sent to JimWoolley, Texas A&M University, for rearing and identification.
Although no yield data were obtained, one farmer reported not harvesting a field due to aphid damage and another farmer estimated at least a 50% yield loss comparing 2 adjacent fields---one treated, the other not. Observations by Way confirmed severe and widespread damage. Not only the margins, but entire fields were infested. Way inspected stubble sorghum after harvest; sugarcane aphids were found on new 2nd growth.
Sorghum was in dough stage at time of treatment applications. This field previously had been treated with Lorsban 4E 2 or 3 times, but aphid populations were still high at time of plot set-up. Data show Transform WG at 0.75 oz/A provided excellent control of sugarcane aphids on the 1st sample date (Table 1). Data also suggest Karate Z "flared" populations of aphids. By the 2nd sample date, aphid populations had declined in untreated plots; thus, no meaningful conclusions can be drawn relative to the later sampling.

Table 1. Mean aphid data for foliar treatments for aphid control in sorghum. China, TX. 2013.

		No. aphids/leaf	
Treatment	Rate	Sep 3	Sep 10
Lorsban Advanced	1 qt/A	14.4 b	13.0
Transform WG	0.75 oz prod/A	0.8 b	0
Karate Z	2 fl oz/A	176.0 a	0.1
Dimethoate 4EC	1 pt/A	3.3 b	0.6
Untreated	---	99.9 a	0
			NS

Means in a column followed by the same or no letter are not significantly (NS) different (P = 0.05, ANOVA and LSD).

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ELECTRONIC CODE OF FEDERAL REGULATIONS

e-CFR Data is current as of January 15, 2014

Title 40: Protection of Environment
PART 180—TOLERANCES AND EXEMPTIONS FOR PESTICIDE CHEMICAL RESIDUES IN FOOD
Subpart C—Specific Tolerances

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§180.668 Sulfoxaflor; tolerances for residues.

(a) *General.* Tolerances are established for residues of the insecticide sulfoxaflor, including its metabolites and degradates, in or on the commodities in the table. Compliance with the tolerance levels specified is to be determined by measuring only sulfoxaflor (*N*-[methyloxido[1-[6-(trifluoromethyl)-3-pyridinyl]ethyl]-γ^4-sulfanylidene]cyanamide).

Commodity	Parts per million
Almond, hulls	6.0
Barley, grain	0.40
Barley, hay	1.0
Barley, straw	2.0
Bean, dry seed	0.20
Bean, succulent	4.0
Beet, sugar, dried pulp	0.07
Beet, sugar, molasses	0.25
Berry, low growing, subgroup 13-7G	0.70
Cattle, fat	0.10
Cattle, meat	0.15
Cattle, meat byproducts	0.40
Cauliflower	0.08
Citrus, dried pulp	3.6
Cotton, gin byproducts	6.0
Cotton, hulls	0.35
Cottonseed subgroup 20C	0.20
Fruit, citrus, group 10-10	0.70
Fruit, pome, group 11-10	0.50
Fruit, small, vine climbing, subgroup 13-07F, except fuzzy kiwi fruit	2.0
Fruit, stone, group 12	3.0
Goat, fat	0.10
Goat, meat	0.15
Goat, meat byproducts	0.40
Grain, aspirated fractions	20.0
Grape, raisin	6.0
Hog, fat	0.01

Hog, meat	0.01
Hog, meat byproducts	0.01
Horse, fat	0.10
Horse, meat	0.15
Horse, meat byproducts	0.40
Leafy greens, subgroup 4A	6.0
Leafy petiole, subgroup 4B	2.0
Milk	0.15
Nuts, tree, group 14	0.015
Onion, bulb, subgroup 3-07A	0.01
Onion, green, subgroup 3-07B	0.70
Pistachio	0.015
Poultry, eggs	0.01
Poultry, fat	0.01
Poultry, meat	0.01
Poultry, meat byproducts	0.01
Rapeseed, meal	0.50
Rapeseed subgroup 20A	0.40
Sheep, fat	0.10
Sheep, meat	0.15
Sheep, meat byproducts	0.40
Soybean, seed	0.20
Tomato, paste	2.60
Tomato, puree	1.20
Vegetable, *brassica,* leafy, group 5, except cauliflower	2.0
Vegetable, cucurbit, group 9	0.40
Vegetable, fruiting, group 8-10	0.70
Vegetable, leaves of root and tuber, group 2	3.0
Vegetable, legume, foliage, group 7	3.0
Vegetable, root and tuber, group 1	0.05
Watercress	6.0
Wheat, forage	1.0
Wheat, grain	0.08
Wheat, hay	1.5
Wheat, straw	2.0

(b) *Section 18 emergency exemptions.* [Reserved]

(c) *Tolerances with regional registrations.* [Reserved]

(d) *Indirect or inadvertent residues.* [Reserved]

[77 FR 59565, Sept. 28, 2012, as amended at 78 FR 38227, June 26, 2013]

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